

Integrating ESG Factors to Equity Valuation

By

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ABSTRACT

ESG stands for Environmental, Social, and Governance. Investors increasingly consider these non-financial ESG factors to identify material risks and growth opportunities. According to the Global Sustainable Investment Alliance (GSIA), the Global ESG Investing market has increased by 55%, from USD22.8 trillion in 2016 to USD35.3 trillion in 2020. The growth is not only in absolute terms but also in relative terms – its share in the total investing market has also been constantly expanding over the years. However, traditional company valuation methods, including the Discounted Cashflow Model and the Comparable Multiple Analysis deployed by various actors in the investment industry, only consider financial variables. So, a practical framework that would allow for the integration of ESG Factors with traditional methods would be handy for the financial community.

Hence, the aim of this paper is threefold; the first is to understand the drivers of extraordinary growth in the ESG Market, such as the evolving definition of fiduciary duty, the enhanced financial performance of ESG portfolios, technological disruption and changing preferences of investors, the second is to examine some of the challenges of ESG Integration briefly and finally to explore the literature and professional practices to develop a valuation framework that can integrate the ESG information into the financial valuation of a company.

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1 Introduction

1.1 ESG Factors

ESG stands for Environmental, Social, and Governance. ESG Investing is a practice in which an investor actively and willingly considers environmental, social, and governance data of the underlying asset, in addition to the traditional financial metrics, to maximize its long-term return. Earlier, ESG investing was a luxury of the niche investors. However, growing awareness and recent events in the world, including the pandemic, have made this practice increasingly mainstream [1].

Environment: It includes factors about the natural world, which consists of the use of, and interaction with, renewable and non-renewable resources such as water, minerals, ecosystems, and biodiversity [1].

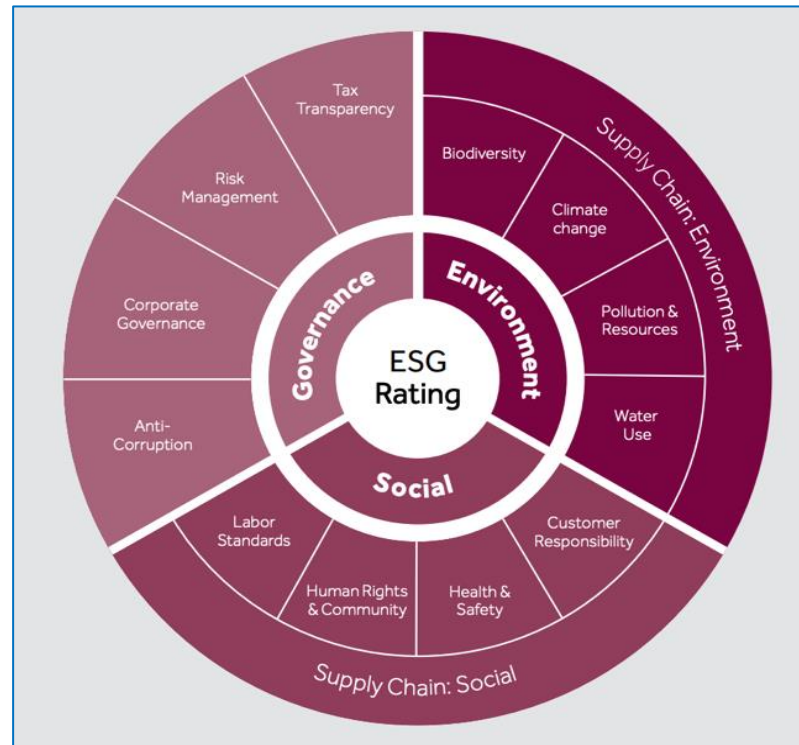
Social: It includes factors that have an impact on people's lives, such as the management of human capital, non-human animals, local communities, and stakeholders [1].

Governance: It includes a set of rules or principles defining rights, responsibilities, and expectations between different stakeholders in the governance of corporations [2]. Governance can also involve issues tied to countries and/or jurisdictions.

In *figure 1*, some key ESG issues are highlighted that financial analysts should consider while evaluating a company's material ESG risks and opportunities.

It should be noted that ESG issues and Investments are interdependent. Environmental, social and governance issues may impact the risk and returns of underlying investments. Still, investments themselves as well have a positive or negative impact on the social and environmental aspects around us.

Figure 1



Source: FTSE Russell

1.2 ESG within Investment Spectrum

ESG Investing exists within a broad spectrum of investments that includes various financial and non-financial returns. In *figure 2*, one can see that on the extreme right hand is the pure financial investment that purely tries to maximize the shareholder value on a risk-adjusted basis. On the other extreme left hand is the pure philanthropic investment that seeks only social returns. ESG Investing tries to maximize the financial returns in the medium to long run by actively considering ESG risks and opportunities. As the focus on non-financial returns or social returns starts increasing, ESG Investing would appear more as the Social Impact Investing. Both these spheres: Social Impact Investing and ESG Investing, are related and share a lot of methodologies and tools. Both these styles of investment are classified under Responsible Investing.

The figure below from OECD summarizes the different investment types [3].

Figure 2: Spectrum of Social and Financial Investing

	Philanthropy		Social Impact Investing		Sustainable and Responsible Investing ⁸	Conventional financial investing
	Traditional Philanthropy	Venture Philanthropy	Social Investing	Impact investment	ESG investing	Fully commercial investment
Focus	Address societal challenges through the provision of grants	Address societal challenges with venture investment approaches	Investment with a focus on social and/or environmental outcome and some expected financial return	Investment with an intent to have a measurable environmental and/or social return	Enhance long-term value by using ESG factors to mitigate risks and identify growth opportunities.	Limited or no regard for environmental, social or governance practices
Return Expectation	Social return only	Social return focused	Social return and sub-market financial return	Social return and adequate financial market rate	Financial market return focused on long-term value	Financial market return only
	Social impact		Social and financial		Financial returns	

Source: OECD (2020) Report

1.3 Evolution of ESG Investing

The broad concept of responsible investing has existed since the 17th and 18th centuries – religious groups such as Quakers and Methodists laid out the guidelines for their followers for the kind of investment they should or should not make. The practice came into the limelight when the United Nations issued the Brundtland Report in 1987, introducing the concept of sustainable development. United Nations Framework Convention on Climate Change of 1992 in Rio de Janeiro and the Kyoto Protocol of 1997 helped create more awareness and pressure in the industry because many countries committed to reducing greenhouse gases. Until the early 2000s, the focus was more on the environmental aspect of sustainability. After widespread fraud at Enron and the subprime housing crisis, social and governance aspects of companies were also brought to the light [1].

In January 2004, former UN Secretary-General Kofi Annan wrote to over 50 CEOs of major financial institutions and urged them to participate in a collaborative ESG project under the auspices of the UN Global Compact and with the backing of the International Finance Corporation (IFC) and the Swiss Government [4]. The initiative's purpose was to figure out how to incorporate ESG into financial markets, thereby planting the seeds of the modern theory of ESG. This

campaign generated a report called "Who Cares Wins" a year later. The research argued that incorporating environmental, social, and governance considerations into capital markets makes solid business sense and lead to more sustainable markets and a better society. During the same period, the UN Environment Programme Finance Initiative published a report called *Freshfields Report* that demonstrated that ESG issues are relevant for a financial assessment. These two publications served as the foundation for the New York Stock Exchange's launch of the Principles for Responsible Investment (PRI) in 2006 and the Sustainable Stock Exchange Initiative (SSEI) in 2009. PRI's role was to advance the integration of ESG into analysis and decision-making through thought leadership and the creation of tools, guidance, and engagement. In contrast, SSEI's goal was to enhance the performance of ESG reporting and encourage a sustainable investment [4].

Presently, the PRI is a thriving global initiative with over 4,000 signatories from 60 countries representing ~USD120 trillion of assets in total [5]. SSEI has more than 90 exchanges and 350 collaborating organizations [6]. These organizations, together with the United Nation's adoption of 17 Sustainable Development Goals (SDGs) in 2015 and the signing of the Paris Agreement on climate change in 2016, boosted the ESG Investing market by 55% to USD35.3 trillion in 2020 as per the latest Global Sustainable Investment Review. The ESG market size represents 35.9% of the total professionally managed assets under management.

1.4 ESG Market

This section takes the data from the Global Sustainable Investment Alliance's Review Report of 2020. The organization undertakes a market review for ESG Investing in the major five markets every two years [7].

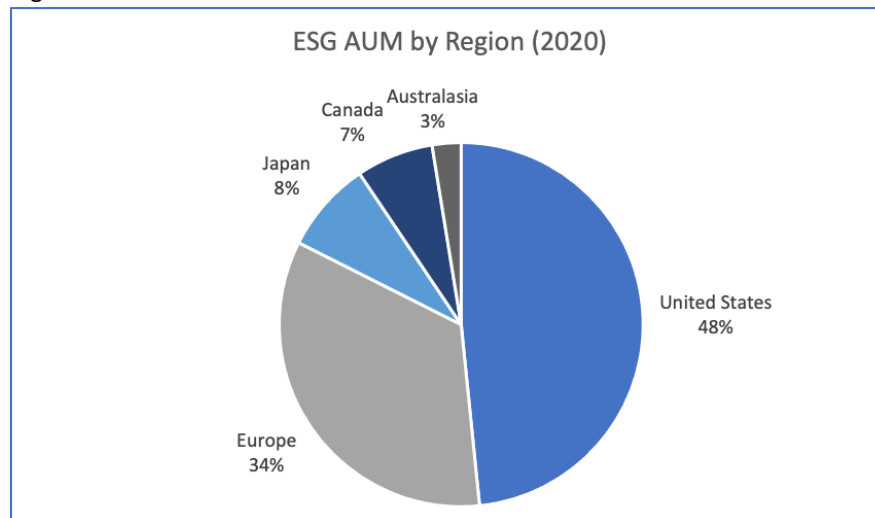
The global ESG Investing market has seen a compound annual growth rate (CAGR) of 11.5%, increasing from USD22.8 trillion in 2016 to USD35.3 trillion in 2020. 48% of those ESG Investments are in the United States, and 34% are in Europe (*refer to figure 3*). Since 2018, Canada and the USA have experienced the highest growth rate in ESG investments of 42.6% and 42.4%, respectively. In Europe, during the same two-year period, we see a decline of 14.6%. However, this decline is attributed to a change in measurement methodology from which European data is drawn for the source report. This change is associated with the revised

definition of sustainable investment that has been included in legislation in the European Union as part of the European Sustainable Finance Action Plan [7].

Table 1

Region	2016	2018	2020	Growth rates	
				16-18	18-20
Europe	12,040	14,075	12,017	16.9%	-14.6%
United States	8,723	11,995	17,081	37.5%	42.4%
Canada	1,086	1,699	2,423	56.4%	42.6%
Australasia	516	734	906	42.2%	23.4%
Japan	474	2,180	2,874	359.9%	31.8%
Total (USD billions)	22,839	30,683	35,301	34.3%	15.1%

Figure 3

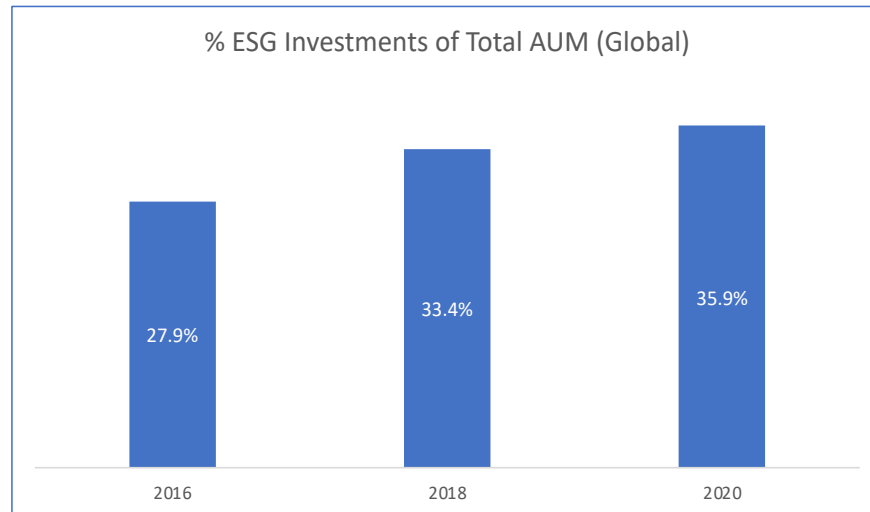


Source: Global Sustainable Investment Alliance's Review 2020

Globally the share of ESG Investments as a percentage of total assets under management has increased from 27.9% in 2016 to 35.9% in 2020 (*refer to figure 4*). Canada is the market with the highest proportion of sustainable investment assets at 62%, followed by Europe (42%), Australasia (38%), the United States (33%), and Japan (24%) [7].

With respect to the type of investors, even though institutional investors such as pension funds, insurers, foundations, etc., dominate any investment market, the role of retail investors is becoming increasingly crucial in ESG investing. Retail investors' share of investments in the ESG market has increased from 11% in 2012 to 25% in 2020.

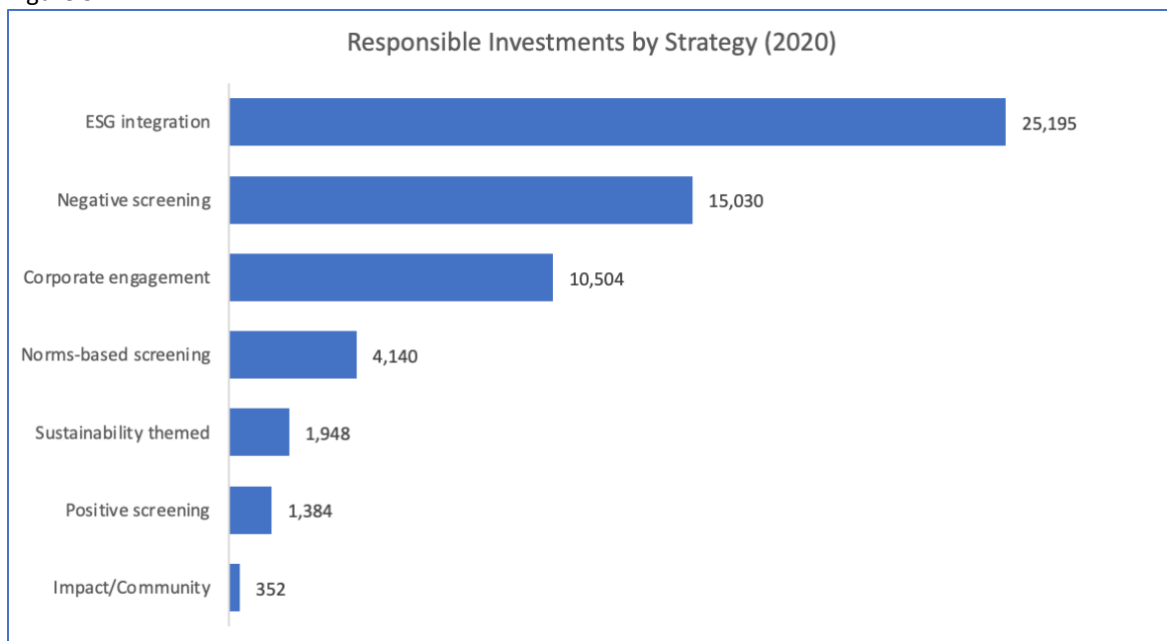
Figure 4



Source: Global Sustainable Investment Alliance's Review 2020

ESG integration is the most popular responsible investing strategy on both a global and regional basis, with USD25.2 trillion in assets under management (refer to figure 5). Negative/exclusionary screening (USD15.9 trillion) is the second most popular investment strategy, followed by corporate engagement/shareholder action (USD10.5 trillion) (*refer to exhibit 1 in the appendix for definitions of each strategy*).

Figure 5



Source: Global Sustainable Investment Alliance's Review 2020

2 Drivers for Growth in ESG Investing

2.1 Fiduciary Duty

Fiduciary responsibilities exist to ensure that persons who handle money on behalf of others act in the beneficiaries' best interests rather than their own. Under the duty of loyalty, fiduciaries must operate in good faith, impartially weigh the conflicting interests of diverse beneficiaries, avoid conflicts of interest, and not act for the advantage of themselves or a third party. The responsibility of prudence requires fiduciaries to invest with the same care, skill, and effort as an average prudent individual [8]. Historically, it was considered that including ESG factors in the evaluation or portfolio selection restricted fiduciaries from fulfilling their duty of loyalty. The underlying notion was wrong for two reasons: 1) the best interest of investors or beneficiaries was measured only in financial terms, and non-financial measures were utterly ignored, and 2) research, as well as examples around us, have shown that ESG factors are financially material, especially in the long run.

However, the modern studies and work undertaken by progressive investment institutions, including the UNEP FI and PRI, rectified the mistake and argued that all long-term value drivers, including ESG issues, should be included in the investment practice, and exclusion of them would be considered as a failure of fiduciary duty.

Although the United States has been slow to adopt this new perspective, other countries, such as Canada, the United Kingdom, and Sweden, are moving to reinterpret the fiduciary duty idea. There are over 730 hard and soft-law policy revisions, spanning approximately 500 policy instruments that support, encourage or require investors to consider ESG issues [9]. For example, the Swedish parliament adopted important amendments on November 28, 2018, mandating the four main national pension funds to become "exemplary" in the sustainable investment field [10]. According to the PRI's report 'Fiduciary Duty in the 21st Century' in 2019 [9], the fiduciary duties of investors require as follows:

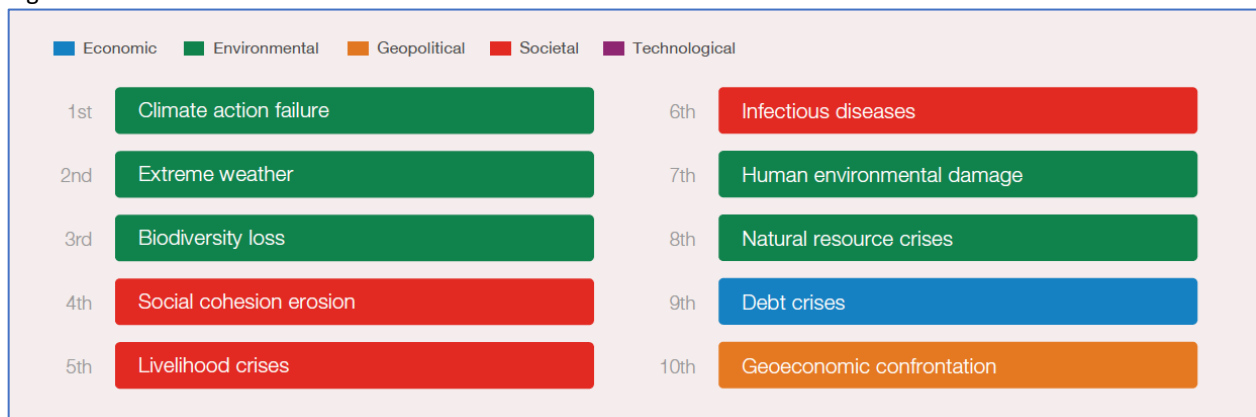
- Incorporate environmental, social, and governance (ESG) issues into investment analysis and decision-making processes, consistent with their investment time horizons.

- Encourage high standards of ESG performance in the companies or other entities in which they invest.
- Understand and incorporate beneficiaries' and savers' sustainability-related preferences, regardless of whether these preferences are financially material.
- Support the stability and resilience of the financial system.
- Report on how they have implemented these commitments.

2.2 Risk Perception

The World Economic Forum's 2022 Global Risk Perception Survey (GRPS) has identified that societal and environmental risks are at the top of the mind of people for the next five years. Over a longer-term horizon of 10 years, environmental risks have captured the top three spots. '*Climate action failure*' is ranked first, followed by '*extreme weather*' and '*biodiversity loss*.' The pandemic has brought certain societal risks to the forefront, with '*social cohesion erosion*' in the fourth place and '*livelihood crises*' in the fifth place [11].

Figure 6



Source: World Economic Forum Global Risks Perception Survey 2021-22

The fact that there is only one economic risk listed in the top 10 perceived risks and that too at the ninth place is the testimony to the growing evolution of ESG concerns. Prudent investors not only want to know the companies' status on ESG in the present but also going forward. Long-term investors can spot winners and losers in rapidly changing landscapes and earn an alpha for their investment portfolios.

2.3 Financial Performance

NYU Stern Center for Sustainable Business and Rockefeller Asset Management conducted a meta-study [12] to explore the relationship between ESG and financial performance in approximately 1,000 research papers from 2015 to 2020. They categorized the articles or papers into two categories:

1. **Corporate Performance:** Papers focused on operating metrics such as return on asset or return on equity, or stock performance for a company or group of companies
2. **Investment Performance:** Papers focused on investment return from the perspective of an investor, for example, measures of alpha or metrics such as the Sharpe ratio on a portfolio of stocks

Additionally, to study the financial performance of a single thematic issue, the study also reviewed papers and articles focused just on low carbon strategies under the same two categories.

The meta-study found a positive relationship between ESG and financial performance for 58% of corporate studies. 13% of corporate studies showed a neutral impact, 21% had mixed results, and only 8% documented a negative relationship. With respect to investment studies typically focused on risk-adjusted attributes, 59% showed similar or better performance relative to conventional investment approaches, while only 14% found negative results. Regarding the additional review of low carbon studies, 57% of corporate studies and 65% of investment performance studies were positive.

On the issue of ways in which ESG engagement created value for companies and investors, the Principles for Responsible Investment (PRI) conducted research by interviewing executives from large-cap companies and institutional investors. The research identified three ways [13]:

1. **Communicative Dynamics:** The 'communicative value' of engagement is created through a greater flow of information and a higher level of understanding between companies and investors.

2. **Learning Dynamics:** Engagement assists firms and investors in producing and disseminating knowledge on environmental, social, and governance (ESG) challenges, thereby expanding learning opportunities and creating 'learning value.'
3. **Political Dynamics:** Both corporations and investors can benefit from engagement because it allows them to build internal and external partnerships that help them push the ESG agenda within their organizations and generate political value.

2.4 Value Creation

Analyzing from a financial perspective, the research has shown us that ESG practices, at times, can create value in five different ways:

1. **Sales Growth:** A strong ESG proposition can help companies command a price premium in existing markets, achieve differentiation among their customers and expand to new markets. According to McKinsey's study, 70 percent of consumers surveyed in multiple industries, including the automotive, building, electronics, and packaging categories, said they would pay an additional 5% for a green product if it met the same performance standards as a nongreen alternative. Also, if the companies win the government's trust through sustainable practices in regulated markets, they are more likely to win approvals and licenses for public contracts or concessions. For example, for-profit companies invited to participate in a huge public-private infrastructure project in Long Beach, California, were evaluated based on their historical performance in the sustainability area [14].
2. **Cost Reductions:** Research has shown examples in which significant cost reductions were achieved through better management of natural resources such as water and energy and minimizing waste. In one of its research, McKinsey found that such efficiencies can affect operating profits by as much as 60%. For example, 3M has saved \$2.2 billion between 1975 and 2019 through its "pollution prevention pays" (3Ps) program, which involves reformulating products, improving manufacturing processes, redesigning equipment, and recycling and reusing waste from the production [14].

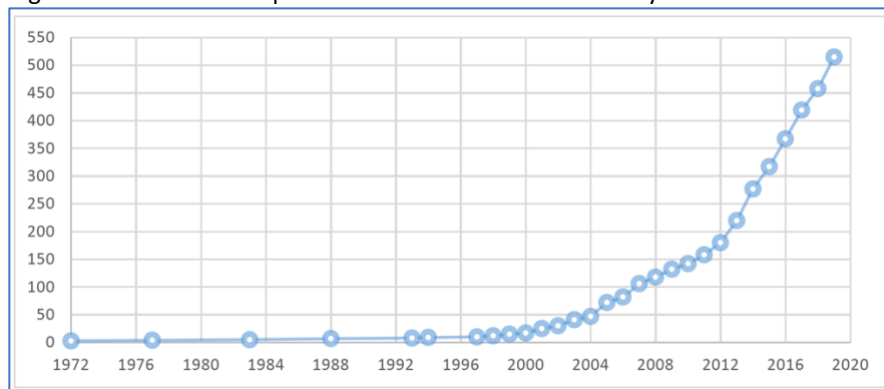
3. **Reduced Regulatory Risk:** It has been seen that strength in companies' ESG practices leads to reduced risk of adverse government action or fines. Analysis conducted by Mckinsey highlighted that, on average, almost one-third of corporate profits are at risk from government intervention [14]. Hence, a better ESG policy can increase the risk-adjusted profit for the company. We have witnessed that BP has faced one of the biggest corporate fines to date because of the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. BP paid a total of USD69 billion in settlements, penalties, and fees because of several cases, including USD18.7 billion settlement with the government [15].
4. **Increased Employee Productivity:** A strong ESG performance should assist firms in attracting and retaining top talent, increasing employee motivation by instilling a sense of purpose, and increasing overall efficiency. Shareholder returns are positively connected with employee happiness. For example, Alex Edmans of the London Business School discovered that over a 25-year timeframe, companies that made to Fortune's "100 Best Companies to Work For" list generated 2.3% to 3.8% higher stock returns per year than their counterparts [15].
5. **Investment and Asset Optimization:** A strong ESG proposal can boost investment returns by shifting capital to more productive and sustainable alternatives (renewables and waste reduction). It can also help businesses avoid stranded investments that may not be profitable in the long run owing to long-term environmental concerns (such as massive write-downs in the value of coal plants). Although the capital required to upgrade initial operations in a company may be significant, waiting it out might just be the most expensive alternative of all. The rules of the game are changing quickly, especially after the pandemic, and governmental responses to emissions will most likely affect energy costs, particularly in carbon-intensive sectors. Bans or restrictions on single-use plastics or diesel-powered cars in city centers will impose new restraints on various enterprises, many of which may be forced to catch up [15].

2.5 Favorable Environment

Over the last decade, the environment surrounding the ESG policy has been quite favorable. A combination of regulatory, social, and technological factors has propelled ESG Investing.

1. **Regulatory:** From an international perspective, the Paris agreement and the UN's Sustainable Development Goals have pushed governments around the world to design and implement policies that focus on ESG goals. Sustainable finance has also benefitted from that overall trend. PRI has identified that 97% of the policy revisions that support, encourage, or require investors to consider long-term value drivers such as ESG factors were developed after the year 2000 [16].

Figure 7: Number of Responsible Investment -Related Policy Revisions



Source: Principles for Responsible Investment (PRI)

The rapid development of the EU Action Plan on Sustainable Growth in Europe, as well as reporting obligations in Asia, have been driving continuous growth since 2016. Periodic modifications of Stewardship and Corporate Governance legislation, with national authorities creating or periodically reinforcing ESG standards, have been another important element.

Examples of some of the regulatory impetus include The European Union's Sustainable Finance Action Plan, and in particular, Sustainable Finance mandated institutional investors, asset managers, and advisers to report on how they incorporate sustainability risks and unfavorable impacts at the entity level, as well as classify and report the sustainability risks and adverse impacts of their ESG products. All investment managers are required by the EU

Sustainable Finance Disclosure Regulation to include sustainability risks in their investments, making sustainable investment strategies such as negative/exclusionary screening, norms-based screening, and ESG integration standard practice for all financial products [7].

In the US, on March 21, 2022, the Securities and Exchange Commission ("SEC"), in a landmark development, proposed rules that would require public companies to disclose extensive climate-related information in their SEC filings. The proposed rule changes would require a company to disclose information on the following points [17]:

1. Climate-related risks that have had or are likely to have a material impact on its business and consolidated financial statements.
 2. Governance of climate-related risks and relevant risk management processes.
 3. Effects of identified risks on the company's strategy, business model, and outlook.
 4. Impact of climate-related events and transition activities on the line items of a company's consolidated financial statements, as well as on the financial estimates and assumptions used in the financial statements.
2. **Technological:** Emerging technologies such as Artificial Intelligence, Blockchain, and Big Data are helping players across the value chain of ESG investing, from investors to the company itself. Some of the ways in which technology has made ESG mainstream is as follows:
1. **Data Collection:** ESG data is frequently dispersed across numerous departments and geographical areas, making collection problematic. Even once the data has been obtained, its quality and accuracy remain questionable. Companies can use technology such as the Internet of Things (IoT) and blockchain to digitize the entire data collection process and track the data back to its source. These technologies have made the data collection real-time, accurate, and reliable [18].
 2. **Data Reporting:** The reporting requirements for companies are constantly increasing as governments around the world are getting more stringent on ESG performance. On top of that, the ESG reporting varies significantly across different reporting standards, geography, and regulator. Hence, the role of the large enterprise-wide data management and reporting system is indispensable.

3. **Data Analysis:** Now, investors have access to multiple third-party sources such as Bloomberg, FactSet, MCSI, and Sustainalytics that provide companies' ESG metrics and proprietary ESG scores and ratings. The information allows investors to easily slice and dice the data to create custom ESG portfolios and earn alpha by training its proprietary machine learning models on the underlying data.
4. **Improve Performance:** The technologies that we have discussed above allow companies to collect and manage the data and help enhance performance across key environmental, social, and governance factors. For example, real-time occupancy monitoring through IoT can help reduce energy consumption by ensuring energy is only used when spaces are occupied, ensuring compliance with legal occupation requirements, enabling hotdesking and flexible work practices, and facilitating social distancing using smart alerts to avoid overcrowding [19].
3. **Social:** The “perfect storm” of global economic fallout caused by the covid-19 pandemic, renewed global political focus on the Black Lives Matter movement and gig economy workers, plus a pall of smoke from unprecedented wildfires on five continents, is reinvigorating scrutiny from consumers, regulators, and employees on ecological and social sustainability considerations, giving ESG investing a new impetus [20]. Earlier, the ESG policy was a “nice-to-have,” but now it has become a high priority for organizations adapting to the post-covid world.

2.6 Ethics and Values

The research has documented that historically investors cared about ESG Investing primarily because of long-term financial reasons, but the recent spur in ESG investing does hint at an increasing proportion of ethical investors, including millennials, that feel that investments can and should serve society in addition to generating a profit. This can translate into investing in businesses that generate a positive impact and/ or avoiding those with a negative impact. According to a survey conducted by The Harris Poll on behalf of CNBC in March 2021, about one-third of millennials often or exclusively use investments that take ESG factors into account, compared with 19% of Gen Z, 16% of Gen X, and 2% of baby boomers [21].

The investors interested in positive impact see the company's commitment to corporate social responsibility (CSR) or the sense of duty to positively serve society before they become involved with that company. The influence that the impact-investing can have varies depending on the industry and the exact company within that industry, but some frequent examples include giving back to the community by assisting the less fortunate or investing in sustainable energy methods to help save the world [22].

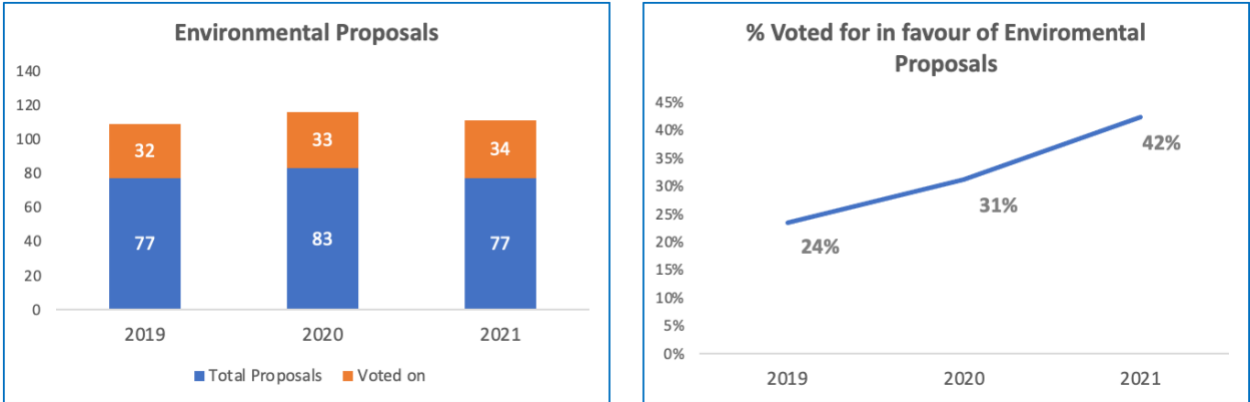
The investors trying to avoid negative impact exclude companies in “controversial” industries, such as tobacco, alcohol, gambling, fossil fuels, and weapons, among others. Religious organizations may also exclude investments that do not meet their ethical guidelines, such as companies that produce contraceptives. In addition, these negative screens can also eliminate the “worst” companies in certain sectors, such as companies with poor labor rights records or bad environmental practices.

2.7 Increasing ESG Activism by Investors

Shareholder activism is on the rise, and ESG is rapidly becoming a focal point of these interventions. Investors have traditionally been hands-off, interested in maximizing their returns by predicting the highs and lows of the stock price and aligning their entry and exit accordingly [10]. However, now both active and passive investors who want to hold a company for a long time want to see that company address the ESG issues and, in turn, increase their portfolio return. Proxy resolutions and proxy voting, which are part of the active ownership approach for sustainable investing, are one type of active participation. The most prominent ESG activist triumph to date was Engine No. 1, a newly founded ESG-focused activist fund, which successfully elected three directors to the board of ExxonMobil to drive the business to a low-carbon economy.

In *figure 8*, we can see that even though the total number of environmental proposals and proposals voted on in proxy seasons has remained stable in the last three years, the average support for all the proposals voted on increased from 24% in 2019 to 42% in 2021 [23].

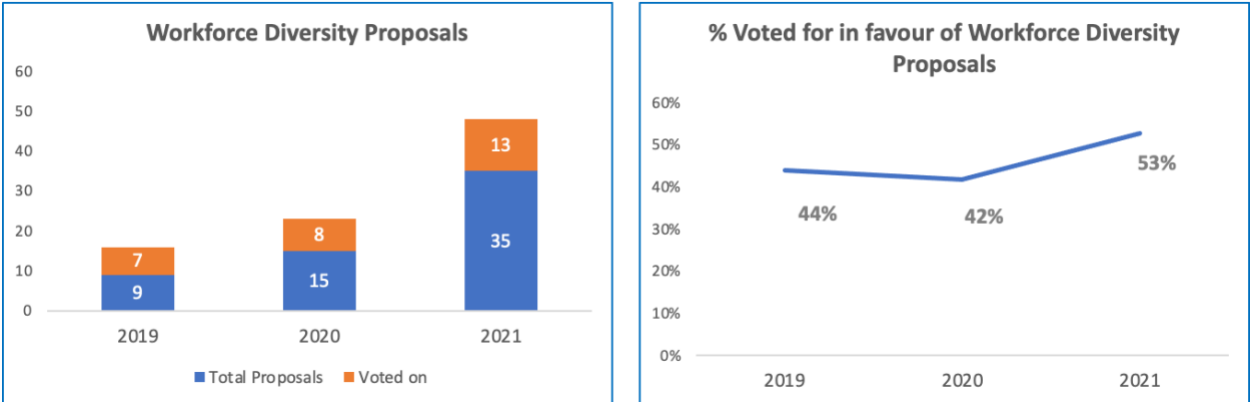
Figure 8



Source: DealPoint data from Shearman and Sterling Report

The proposals relating to workforce diversity increased four times from just 9 in 2019 to 35 in 2021. The proposals voted on also increased from 7 to 13 in three years. The average support has also followed the trend and increased from 44% in 2019 to 53% in 2021 (*ref. figure 9*) [23].

Figure 9



Source: DealPoint data from Shearman and Sterling Report

2.8 Too Big to Fail

The investment industry is highly concentrated. The top five asset managers control 22.7 percent of externally managed assets, while the top ten control 34%. Smaller investment firms might be able to protect themselves from climate change and other systemic risks by investing in "doom" assets such as gold or companies that provide climate change adaptation services. However, it is almost impossible for large investment firms to mitigate system-level risks. Firms with trillions of dollars under control have no hedge against the global economy; in other words, they have become too big to let the planet fail. Their best bet is to be proactive and incorporate ESG factors into their investment allocation process itself [10].

3 Challenges for ESG Integration into Investing

Even though ESG Investment has seen unprecedented growth, it has come with its share of challenges and problems. Standardization and data reliability are some of the most significant hurdles. Other areas of concern include cost, measurement methodology, accountability, awareness, and politics. The detailed discussion on challenges is as follows:

3.1 Standardization

The existing practices of ESG Investing in its present form are more of art than science. A lot depends upon the qualitative judgment by the concerned investment professionals interpreting the results of various factors considered during the approach. The practices, procedures, and methodologies followed for evaluating the ESG indicators vary significantly because there is neither any uniform globally accepted definition nor any globally accepted standards for these terms or concepts. This makes it difficult to compare even the financial figures category-wise or year-wise. Further, in the absence of any globally accepted procedures or methodologies, investment bankers have flexibility in designing and implementing their approach. A Global Survey [24] revealed that the greatest challenges faced by investors in integrating ESG information into their investment processes are the lack of cross-company comparability (44.8%) and the lack of standards governing the reporting of ESG information (43.2%). 34.8% of respondents were of the view that lack of comparability over time is also an impediment to ESG Integration.

3.2 Quantifiable Information

ESG Investing at present seems to be primarily restricted to developed countries only, such as the USA, Canada, and Europe. The overwhelming population of the universe lives in third world countries or the developing nations with significant gas and carbon emissions besides other ESG issues. Therefore, these developing countries must also be brought under the umbrella of ESG Investing. It will be very difficult to achieve the overall objectives without active participation by all the countries. It is also true that the relevant information or data, especially for non-financial

factors, may not even be available presently in these countries or, if available, it shall be highly scattered. This lack of quantifiable ESG Information has been considered a challenge by 37.8% of respondents in a global survey [24]. However, it is felt that this limitation can be overcome to a great extent by mandating the large investment funds or sovereign funds based in the USA, Canada, or Europe to apply the same ESG Investing norms to all their investments in developing countries also as they do in their own country. Since large investment funds have access to ESG Information and have resources also, this may go a long way in promoting the integration of ESG investing in all countries.

3.3 Integration Cost

ESG Investing might involve high costs in terms of technical skills and sourcing of data/information, which may be costly to obtain if not readily available. This aspect seems to be more relevant for developing nations, where the concept of ESG Investing is yet to take off mainly due to these high costs, especially where the information is not readily available. The global survey indicated that about 40.5% of respondents felt that the (high) cost of gathering and analyzing ESG information is a barrier to its integration [24]. Therefore, it is essential that the “materiality” aspect is taken into consideration before choosing the tracking metrics and indicators to optimize the cost and benefit.

3.4 Supply Chain Integration

ESG Investing to be successful requires that any evaluation of ESG factors must be examined for the total supply chain at a global level. Suppose a company in the supply chain transfers its polluting plant to a vendor in a third-world country and starts sourcing its inputs from them. In that case, there may not be any net improvement at a global level, whereas there might be performance improvement at the company level. This defeats the whole objective of the ESG Investing. It is sometimes alleged that the increasing foreign direct investment in developing nations is one of the major drivers for the relocation of polluting industries as developing countries may ignore the sustainability aspect in an attempt to increase their Gross Domestic

Product (GDP). So, unless ESG Investing norms are applied in all cases by the large investment funds, there may be the possibility of no real gain to the society at large in some cases.

3.5 Regulation and Reporting

An effective regulatory and compliance mechanism ensures transparency and meaningful disclosure. The periodical disclosures must reveal reliable and relevant information to the stakeholders to integrate that data into their analysis and be able to take a decision. Neither excessive disclosures without much relevant information nor no disclosure/ too few disclosures would add value to them. The global survey published by CFA Institute indicated that 39.4% of respondents believed that ESG information disclosed by firms is too general to be helpful. Further, 28.3% were of the view that the disclosure of ESG information by firms is too infrequent to be useful, whereas 16.6% believed that there is too much disclosure, making it difficult to filter out what is material [24].

3.6 Independent International Body

Sustainability is a global issue impacting the whole universe involving all the countries. Since this requires detailed financial and non-financial information, the support of each of the governments may be necessary as Investing Funds have their limitations and can't prescribe mandatory regulations, disclosures, or oversight mechanisms to ensure compliance by all the stakeholders. Therefore, an independent international body similar to the International Accounting Standards Board (IASB) may be desired to develop and approve International Sustainability Reporting Standards. This will strengthen sustainability accountability by reducing the information gap between the providers of investment funds and the people to whom they have entrusted their money. This institution may also act as a resource institution to help the developing countries in rules making or law drafting as the developing countries don't have much technical competence or sustainability regulations for their protection.

3.7 Reliability of ESG Data

ESG Investing means different things to different stakeholders depending on their needs and perceptions. Further, norms may also vary based on target customers. Therefore, it is necessary that accurate, relevant details like industry-wise market data and environmental impact data be used, which are reliable and continuously updated. However, no governments have thus far mandated the use of third-party risk assessment and audit of cost impact analysis / ESG credentials used to avoid 'greenwashing' practices or conveying false and misleading impressions. 26.4% of respondents were of the view in the global survey that the lack of reliability of data/lack of audit and assurance impedes ESG Integration [24].

3.8 Awareness among Leaders

There is a perception that ESG Investing generally has lower financial terms. Harvard Business Review noted that many corporate leaders believe that pursuing a sustainability agenda runs counter to the wishes of their shareholders [10]. They think that only a handful of investment firms care about sustainability, but in practice, investors, portfolio managers, and sell-side analysts will rarely engage corporate executives on ESG issues. They don't perceive the practice to be mainstream in the investment community. However, this perception is outdated. Harvard Business Review interviewed 70 senior executives at 43 global institutional investment firms, including the world's three most prominent asset managers (BlackRock, Vanguard, and State Street) and giant asset owners such as the California Public Employees' Retirement System (CalPERS), the California State Teachers' Retirement System (CalSTRS), and the government pension funds of Japan, Sweden, and the Netherlands. They found that ESG was almost universally top of mind for these executives. The study also stated that most of the investment leaders in their study were taking meaningful steps for their firms to integrate sustainability issues into their investing criteria [10]. The global survey published in CFA Institute magazine also confirmed that ESG information is considered in the investment decisions by 63% of respondents because ESG information is financially material to the investment performance [24].

3.9 Politics

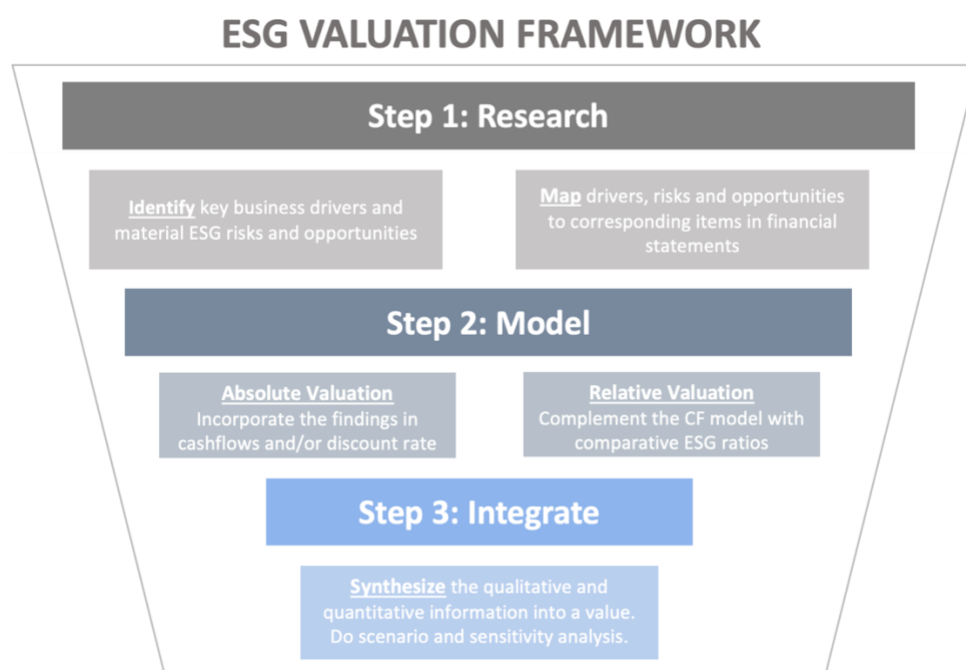
Despite the best efforts, attempts to introduce ESG Investing may not be sometimes successful due to unforeseen political and other uncertainties. For example, Europe's recent search for energy sources outside of Russia may slow down its transition to low carbon. Further, this may also necessitate an increase in coal consumption leading to higher global greenhouse emissions in the short to medium term. This may undo some of the efforts of the ESG funds. However, despite these constraints, there is no doubt that the benefits of ESG Investing will certainly outweigh its costs. Therefore, it may be necessary that proper ESG Investing be applied immediately with enhanced pace in all cases universally to ensure the sustainability of our planet for our future generations [10].

4 Integrated Valuation Framework

4.1 Summary

In this part of the paper, we present a valuation framework that will provide the user with a structured way of integrating both qualitative and quantitative ESG information into the valuation of a company. This part of the paper and framework was developed by analyzing various methodologies and techniques in the public domain from institutions such as CFA Institute, A4S CFO Leadership Network, Norwegian Forum for Responsible and Sustainable Investments (Norsif), Sustainability Accounting Standards Board (SASB), Principles for Responsible Investment (PRI), KPMG and others.

The ESG Valuation Framework developed has three stages: **Research, Model, and Integrate.**



The ‘Research’ phase includes identifying the key drivers of the company’s business model, assessing the sources and types of ESG risks and opportunities, determining the materiality of those ESG risks, and finally mapping these risks and opportunities to relevant items of a financial model. The second phase, ‘Model,’ caters to incorporating mapped ESG risks and opportunities into Discounted Cashflow Model by either adjusting cash flows and/or discount rate. It is also recommended that an absolute valuation model is complemented by the comparative company

analysis using different ESG and market value ratios. The last and final phase of the framework, 'Integrate,' synthesizes the information from previous steps to conclude on a particular value. The value is constantly analyzed and presented under certain assumptions and hypotheses. These assumptions are calibrated with sensitivity analysis. ESG pathways for a company are often uncertain and non-linear and hence are taken care of by executing a scenario analysis.

4.2 Research Phase

The Research phase can be divided into three main tasks:

1. Identifying the key business, and company valuation drivers
2. Identifying the material ESG risks and opportunities
3. Mapping all the drivers, risks, and opportunities to relevant items of the financial statements or directly to the components of the financial model

4.2.1 Task 1: Key Business Drivers

The key to any valuation exercise is understanding the basics of that company's business and the industry in which it operates. In my experience as a financial consultant, I have felt that many valuation professionals do not spend sufficient time digging deep into the dynamics of the business model. ESG policy would be under the backdrop of the company's core business policy and not the other way around. Hence, taking the time to understand the foundation of business always helps with the depth of one's valuation analysis.

Below are some of the key areas that an analyst must consider:

Industry

- Market size and the stage of the overall industry
- Overview using Porter's Five Forces
- Competitive landscape
- Regulatory environment

Business

- Customer value proposition
- Business value chain
- Product/ Service portfolio
- Management's strategic focus

- Key suppliers and countries of sourcing
- Distribution channels

Income Statement Drivers

- Revenue model
- Revenue split by products/ services
- Revenue split by markets and customer
- Key cost components split into fixed and variable
- Profit margins at different levels
- Profitability by products/ services and markets

Balance Sheet Drivers

- Key tangible assets
- Key intangible assets
- Capital structure

4.2.2 Task 2: Material ESG Risks and Opportunities

As we have seen in the first part of this paper (*ref. figure 1*), there are many ESG factors in the world in which a company operates. However, not all the ESG risks and opportunities would be financially material to every company and sector. Materiality is measured both in terms of the magnitude of impact and the likelihood of its occurrence. Hence, from a cost and benefits point of view, only a few would be relevant enough to be included within our financial model.

As a starting point, one could look at the SASB's 'Materiality Finder' of the sector or industry in which the company operates [25]. The SASB's Material Finder would help identify material areas across five dimensions of sustainability: the environment, human capital, social capital, business model and innovation, and leadership and governance for a particular sector. It should be noted that companies will tend to address sector challenges and opportunities differently and will have distinct risk exposures based on their specific operational footprint [26]. Hence, SASB's materiality guidance should only be seen as a guide for further research. An analyst should identify company-specific issues using company reports, discussions with management, sector-specific sustainability reporting, equity-analyst reports, and external data providers [27].

In figure 10, we can see an example of three of 77 industries on SASB's website. In red are the categories of risk that are defined material. As one can see, the issues identified here are pretty broad and generic; only further research will help narrow them down to the company level.

Figure 10

Dimension	General Issue Category	Health Care Delivery	Non- Alcoholic Beverages	Electric Utilities & Power Generators
Environment	GHG Emissions			
	Air Quality			
	Energy Management			
	Water & Wastewater Management			
	Waste & Hazardous Materials Management			
	Ecological Impacts			
Social Capital	Human Rights & Community Relations			
	Customer Privacy			
	Data Security			
	Access & Affordability			
	Product Quality & Safety			
	Customer Welfare			
	Selling Practices & Product Labeling			
Human Capital	Labor Practices			
	Employee Health & Safety			
	Employee Engagement, Diversity & Inclusion			
Business Model & Innovation	Product Design & Lifecycle Management			
	Business Model Resilience			
	Supply Chain Management			
	Materials Sourcing & Efficiency			
	Physical Impacts of Climate Change			
Leadership & Governance	Business Ethics			
	Competitive Behavior			
	Management of the Legal & Regulatory Environment			
	Critical Incident Risk Management			
	Systemic Risk Management			

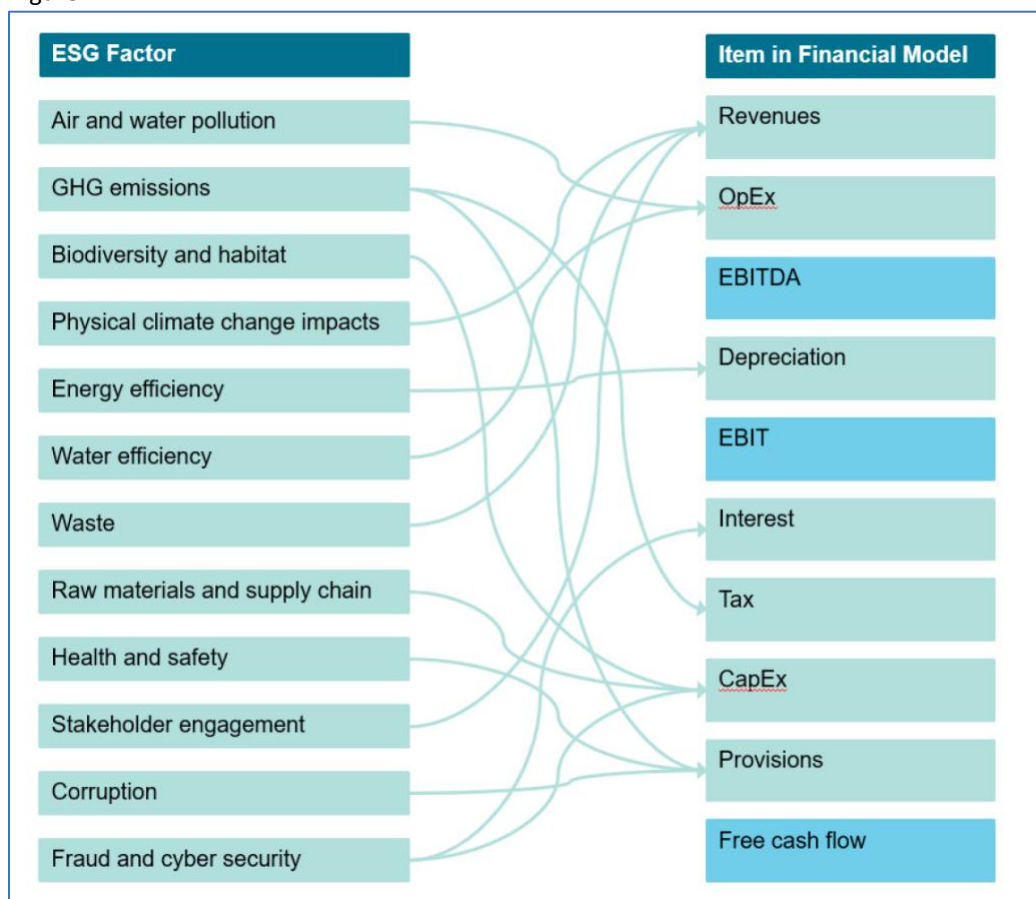
Source: SASB's Website Materiality Finder Example

Often, the company in evaluation would operate in multiple sectors, or its products or services would overlap with two different sectors. In such cases, it will be helpful to identify the material issues by considering all the relevant sectors.

4.2.3 Task 3: Mapping Risks and Opportunities with Financial Variables

The last part of the Research phase involves linking the identified ESG issues with relevant variables or items of the financial model or financial statements. The purpose of this task is to incorporate the material ESG risks and opportunities in the financial model in order to quantify their impacts on the final value of the company. As a rule, an ESG issue should either be mapped to an item in cash flow or discount rate. Capturing the same impact in both cash flow and discount rate would lead to double-counting in the final value. In *Figure 11*, one can see an example mapping of different ESG factors with a relevant item in the financial model [28].

Figure 11



Source: WWF and B Capital Partners Report “Integrating ESG Factors into Financial Models for Infrastructure Investments”

4.3 Model Phase

4.3.1 Absolute Valuation

Once the ESG factors or specific ESG issues are identified and mapped, an analyst needs to quantify the magnitude of their impacts through various sources, including earning calls, management interviews, company reports, etc. Once these estimates are determined, the adjustments are made to the Discounted Cashflow (DCF) Model by incorporating those estimates on revenue and/or costs or discount rate. For example, if a company invests in energy efficiency infrastructure in its plants, you could expect an upfront capital expenditure; however, that should be compensated by reducing future energy bills in cash flows (*ref. Table 2*).

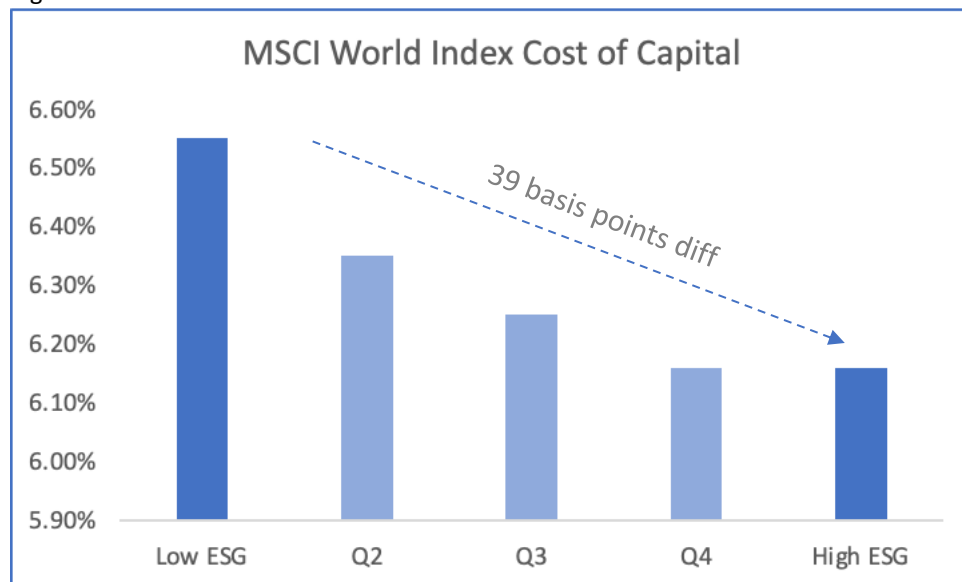
Table 2

DCF Template Years	1	2	3	4	5
EBIT					
Less: Reduction in Energy Bill					
D&A					
Tax					
Capital Expenditure					
Add: Energy Efficiency Infrastructure					
Changes in Working Capital					
Free Cashflows to the Firm (FCFF)					

We have also seen that when it is not possible to estimate the impact of different ESG factors, the analysts often bundle the negative or positive effects in cash flows of those factors through adjustments in discount rate directly. So, the ESG-friendly companies could see a downward adjustment in their cost of capital by 25 basis points to 100 basis points. MSCI, in its research, noted that the average cost of capital of the highest-ESG-scored quintile in its World index was 6.16%, compared to 6.55% for the lowest-ESG-scored quintile (*ref. figure 12*); the differential was even higher for its Emerging Market index [29]. However, bundling the effects directly in the discount rate is not recommended because it is difficult to estimate the cumulative effect, and as a result, the adjustment becomes arbitrary. In case the observable effect is purely in the discount rate, for example, because of the company's green operations, it was able to attract a

lower cost of debt from an ESG fund, then capturing the effect directly in the discount rate would be appropriate.

Figure 12



Source: MSCI Research (2020)

4.3.2 Relative Valuation

The relative valuation approach also referred to as the market value approach is one of the most used valuation methods in corporate finance. This approach determines the subject company's valuation based on its peer companies' ratios. However, in the context of ESG integrated valuation, this method would best serve as a complementary approach for two reasons: (1) ESG has multiple dimensions, and it is difficult to capture its essence in a few ratios, and (2) Even without ESG integration, it is difficult to find a pure comparable peer firm for a given company and finding peer firm with similar business as well as ESG policy is even more tricky.

Having said that, relative valuation is beneficial for having a benchmark of your valuation and doing a macro-level sanity check. It also gives an analyst a deeper perspective of the company's metrics and performance. In addition to analyzing traditional valuation and financial ratios, an analyst should also analyze and compare peer companies' ESG mixed ratios such as Scope 1, 2, 3

GHG¹ / Revenue, Scope 1, 2, 3 GHG / EBITDA², and Scope 1, 2, 3 GHG / electricity generated, etc. The analyst can also take into consideration different ESG ratings by external data providers such as MSCI, Sustainalytics, Bloomberg, FTSE, and Thomson Reuters. One must keep in mind that still lot of this external ESG data is noisy and unreliable. According to a research at MIT, the correlation among prominent agencies' ESG ratings was, on average, 0.61; by comparison, credit ratings from Moody's and Standard & Poor's are correlated at 0.92 [30].

Moreover, many rating agencies' approach is linear in nature, which involves adding apples and oranges to reach a final rating score. However, such simple additions can lead to less meaningful trade-offs. For example, one could potentially offset a certain carbon footprint by hiring more women managers. Hence, it is recommended that an analyst should never make a judgment just based on the ESG ratings but try to assess, whenever possible, the material factors at an individual level.

4.4 Integrate Phase

In the last step, we need to integrate the information from the previous two phases to conclude our integrated valuation exercise. The following tasks are recommended in this phase:

1. **Value across Approaches**: The value of the company should be calculated and viewed under various approaches or methodologies. Some of the approaches that could be considered are 1) DCF with ESG adjustments based on a single scenario, 2) DCF with ESG adjustments from multiple different scenarios, 3) Market Value approach and 4) A combination of DCF and Market Value using weights or simple average.
2. **Choosing one Value**: Based on the careful consideration of the information in hand, an analyst finally must choose the best approach and a single value that minimizes the uncertainty and maximizes the quality of information. The approach should also be logical and easy to explain to different stakeholders to have meaningful conversations and actions.

¹ GHG: Greenhouse Gases

² EBITDA = Earnings Before Interest, Tax, Depreciation, and Amortization

3. **Sensitivity Analysis**: The final valuation number will heavily depend on some of the material financial and ESG assumptions. Many of these assumptions will likely fall under a certain range rather than a single number. Hence, it is best to do a sensitivity analysis of the company value by moving those critical inputs upward and downward between a certain interval. This exercise would also help us ascertain a range of value for the company as well.
4. **Holistic View**: The valuation of a company is as good as the quality of inputs and assumptions included in the financial model. Hence, it should always be presented and considered under the backdrop of analysts' stories and hypotheses. A proper integrated valuation exercise should be able to tell a company's story around its business model, growth outlook, performance, competitive position, and ESG strategy.
5. **ESG Intangible**: As a part of a valuation exercise, ESG can also be analyzed and reported as a separate ESG asset or liability. The difference between the present value of cash flows with ESG adjustments and the present value of cashflows without any adjustments would be the amount allocated to ESG Intangible Asset. If the difference is positive, it is an ESG asset, adding value to the company in the long run. If the value is negative, it would be a liability destroying the value in the future. Viewing the ESG value separately as an asset or liability gives a bigger picture of ESG risks and opportunities.

4.5 Example Case Study

We would apply the framework to a simple example case study for better understanding and clarity. In this example, we have a company XYZ, an offshore wind power generation company with one plant.

This company has a power purchase agreement signed with a utility company for the long term. In a typical year, the company would sell \$100 million and incur 62 million in costs, including \$10 million in depreciation. However, the company has estimated that the climate change impact would lead to a disruption in year 3, which will lead to 50% less power generation in that year. From year 4 onwards, the generation estimates will decrease by 20%. The company plans to invest in a climate change adaptation technology that will cost \$60 million upfront but would limit the percentage reduction in generation quantity to 30% in year 3 and to just 5% from year 4 onwards. The incremental operational cost of using this technology is \$3 million, including \$1 million of additional depreciation from year 3 onwards.

The company will also invest \$5 million in labor safety proposals because the industry, including XYZ, faces many accidents and incurs almost \$0.5 million every year in fines and settlement claims. To finance climate technology, an ESG fund provides a loan at a 4% interest rate compared to the market rate of 4.5%. The company currently has a cost of equity of 8% with a debt/equity ratio of 1:4. If a company takes a loan from an ESG fund, the cost of equity will increase to 8.5% because of the higher levered beta, and its debt-equity ratio will change to 1:2. The terminal value of the business at the end of year 5 can be assumed at 7 times year-end EBITDA. Following assumptions can be made in this example: the tax rate of 25%, recurring capital expenditure (capex) of \$2 million and recurring investment in working capital of \$0.5 million.

Using the Integrated Valuation Framework, we would divide our work into three phases: Research, Model, and Integrate.

Research Phase

Identify

- Key Business and Valuation Drivers:
 1. Revenue: Locked in price through the long-term PPA
 2. P&L: Cost management drives Profitability
 3. Trend: Increasing demand for Renewable Energy

- ESG Risks and Opportunities:

Risks:

1. GHG Emissions: Very Low
2. Workplace Accidents: Medium (**Material risk**)
3. Disruptions through Climate Change: High (**Material risk**)

Opportunities:

1. Access to Cheap Loan
2. Improvement in Worker Safety
3. Improve Resilience through Climate Change Adaption Technologies

Map

Issue	Type	Financial Item	Effect
Workplace Accidents	Risk	Cost Brand	Increase Decrease
Climate Change Disruptions	Risk	Revenue	Decrease
Worker Safety Proposal	Opportunity	Capex Cost	Increase Decrease
CC Adaptation Tech	Opportunity	Capex Cost D&A ³	Increase Decrease Inc. ⁴
Lower Cost of Debt	Opportunity	Discount Rate	Decrease

³ D&A = Depreciation and Amortization

⁴ Inc = Increase

Model Phase

Absolute Model

Below we can see the DCF Model with ESG adjustments. The Revenue loss is compensated through investment in climate change adaptation technologies. The company also invested \$5 million in work safety proposals, potentially saving \$0.5 million every year. The cost of capital was also reduced by almost 30 basis points due to a cheaper loan from the ESG fund.

DCF With Adjustments Years	1	2	3	4	5	Comments
Revenue	100	100	50	80	80	Incremental revenue
Add: Adj 1 - CC Adaption Technology			20	15	15	
Cost	(62)	(62)	(62)	(62)	(62)	Incremental cost
Add: Adj 2 - CC Adaption Technology			(3)	(3)	(3)	
Add: Adj 3 - Labor Safety	0.5	0.5	0.5	0.5	0.5	Incremental savings
EBIT	39	39	6	31	31	Incremental cost
D&A	10	10	10	10	10	
Add: Adj 4 - CC Adaption Technology			1	1	1	Investment/ Capex
Tax	(10)	(10)	(1)	(8)	(8)	
Capital Expenditure	(2)	(2)	(2)	(2)	(2)	Investment/ Capex
Add: Adj 5 - CC Adaption Technology	(60)					
Add: Adj 6 - Labor Safety	(5)					Investment/ Capex
Changes in Working Capital	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	
Free Cashflows to the Firm (FCFF)	(29)	36	13	31	31	

Discount rate	7.0%
Present Value of FCFF	62
Present Value of Terminal Value	207
Enterprise Value	269

An analyst can also construct the DCF without any adjustments for further clarity.

DCF Without any Adjustments Years	1	2	3	4	5
Revenue	100	100	50	80	80
Cost	(62)	(62)	(62)	(62)	(62)
EBIT	38	38	(12)	18	18
D&A	10	10	10	10	10
Tax	(10)	(10)	-	(5)	(5)
Capital Expenditure	(2)	(2)	(2)	(2)	(2)
Changes in Working Capital	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Free Cashflows to the Firm (FCFF)	36	36	(5)	21	21

Discount rate	7.3%
Present Value of FCFF	92
Present Value of Terminal Value	138
Enterprise Value	230

Note: FCFF = EBIT + D&A - Capex +/- Changes in Working Capital + Adjustments

Note that the discount rate in both the scenarios is calculated as follows:

- ESG Scenario: $(8.5\% * 2/3) + (4\% * 1/3) = 7.3\%$
- Base Scenario: $(8.0\% * 4/5) + (4.5\% * 1/5) = 7.0\%$

Relative Model

In the table below, we compare the integrated valuation of company XYZ with peer firms PQR and ABC. We can see that the EBITDA Margin of all three companies is within a range. One can notice that XYZ is performing better on GHG emissions and Workplace accidents. This could potentially explain the higher valuation multiple (EV/EBITDA) of 5.5x compared to 4.9x of PQR and 5.2x of ABC.

Variables	XYZ	PQR	ABC
# of Plants	1	1	1
Revenue (Y1)	100	80	95
EBITDA Margin (Y1)	48.5%	47.5%	49.0%
EV/ EBITDA	5.5x	4.9x	5.2x
GHG Emissions (Mt CO2e)	0.55	0.65	0.60
Workplace Accidents (#)	45	90	100

Integrate Phase

- XYZ is valued at \$269 million during the DCF approach. It is trading at a slight premium to its peers, with an EV/ EBITDA of 5.5x.
- The company's new ESG strategy is contributing \$39 million to its value (ESG Asset = DCF with adjustments of \$269 million - DCF without adjustments of \$230 million)
- The valuation is sensitive to the discount rate and degree of prevention in revenue loss from year four onwards due to climate change adaptation technology. Hence, we have presented a data table showing the value at different levels of these variables.

Discount rate	Reduction in revenue Y4 onwards			
	EV (\$ M)	2.5%	5.0%	10.0%
	6.8%	287	272	241
	7.0%	284	269	238
	7.3%	281	266	236

5 Conclusion

The paper started by defining ESG and ESG Investing. ESG Investing is a practice in which an investor actively and willingly considers the underlying asset's environmental, social, and governance data and the traditional financial metrics to maximize its long-term return. Maximizing the financial return for shareholders and achieving it over a long-term horizon are two of the most critical aspects of ESG. We also looked at how ESG Investing differs from other forms of investing. The pure financial investment maximizes the shareholder value on a risk-adjusted basis, and the pure philanthropic investment only seeks social returns. ESG Investing stands in the middle, where it tries to maximize the financial returns in the medium to long run by actively considering ESG risks and opportunities. As the focus on non-financial or social returns increases, ESG Investing would become closer to Social Impact Investing, another growing form of investment in the market. We noted that the ESG Investing market saw an exponential boom in recent years, increasing by 55% since 2016 to USD35.3 trillion in 2020. ESG market already represents 35.9% of the total professionally managed assets under management. The United States and Europe are one of the biggest markets representing 48% and 34% of the total industry, respectively.

In the second part of this paper, we examined in detail the drivers behind the exceptional growth of ESG Investing. The evolving interpretation of fiduciary duty, which no longer restricts the asset managers from incorporating ESG factors into their investment process, has boosted the market. The modern definition encourages fiduciaries to fulfill their duty by considering all long-term value drivers, including ESG issues. We also challenged the popular misconception that sustainability always comes at lower returns. According to a comprehensive meta-study, 59 percent of research papers revealed that ESG-friendly portfolios or stocks outperformed traditional investment methodologies. As investors and other community members become aware of these studies, more people try to integrate ESG into their portfolio decision-making. Another vital catalyst to ESG Investing has been a favorable environment in the form of a regulatory framework, political buy-in, and technological disruption. From Asia to the United States, all the governments are bringing in new legislation or amending the existing ones to

improve the ESG standards and incentives. Political parties are willing to include ESG in their campaign. New technologies such as the cloud, the internet of things, and artificial intelligence are helping both companies and investors in their integration efforts. Lastly, the perfect storm of global economic fallout caused by the covid-19 pandemic, social movements, gig economy workers, and unprecedented wildfires on five continents is constantly changing the risk perspective of society. According to the World Economic Forum's survey, the environmental risks have captured the top three spots. '*Climate action failure*' is ranked first, followed by '*extreme weather*' and '*biodiversity loss*.'

In the third part of the paper, we briefly looked at some of the challenges we face while integrating ESG into the investment process. The reliability and standardization of data is the biggest hurdle to ESG Integration. We have seen that many third-party data providers and rating agencies are coming in to tackle these problems. However, the industry is still nascent, and primary data sources are pretty scattered. So, the quality of information is still not at the level of traditional financial data, and the per-unit cost of relevant data is on the higher side. In addition to the problem of data, a lot of ESG data is qualitative and, from a methodological standpoint, difficult to quantify and attribute to a particular product or company. Industry requires new rules, standards, frameworks, and methodologies. This was also one of the motivations for writing this thesis. The industry would appreciate the consolidation of different ESG standards agencies to form one universal international institution. Such an institution would help bridge the gap in knowledge, accountability, and disclosure among different investment actors, companies, investors, and countries.

In the final part of the paper, I try to present a simple and practical framework for incorporating ESG information into a typical corporate financial valuation work. The framework was based on literature from various academic intuitions, professional organizations, and personal experiences. The framework divides the valuation exercise into three phases: the 'Research' phase includes identifying the company's business drivers, material ESG risks, and ESG opportunities. The identified variables are then mapped to different items of a financial model. The second phase 'Model,' involves incorporating mapped ESG risks and opportunities into Discounted Cashflow Model by either adjusting cash flows and/or discount rate. The last phase

of the framework 'Integrate,' synthesizes the information from previous steps to conclude on a particular value. The value should always be analyzed and presented under certain assumptions and hypotheses. These assumptions are calibrated with sensitivity analysis. ESG pathways for a company are often uncertain and non-linear and hence are taken care of by executing a scenario analysis. To conclude, the valuation exercise is a mix of art and science and reflects the work of a particular team or analyst, so the user is always encouraged to modify or adapt the framework based on situation and information to make it more robust.

6 Appendix

6.1 Exhibit 1

ESG integration	The systematic and explicit inclusion by investment managers of environmental, social and governance factors into financial analysis.
Corporate engagement & shareholder action	Employing shareholder power to influence corporate behaviour, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting that is guided by comprehensive ESG guidelines.
Norms-based screening	Screening of investments against minimum standards of business or issuer practice based on international norms such as those issued by the UN, ILO, OECD and NGOs (e.g. Transparency International).
Negative/exclusionary screening	<p>The exclusion from a fund or portfolio of certain sectors, companies, countries or other issuers based on activities considered not investable.</p> <p>Exclusion criteria (based on norms and values) can refer, for example, to product categories (e.g., weapons, tobacco), company practices (e.g., animal testing, violation of human rights, corruption) or controversies.</p>
Best-in-class/positive screening	Investment in sectors, companies or projects selected for positive ESG performance relative to industry peers, and that achieve a rating above a defined threshold.
Sustainability themed/thematic investing	Investing in themes or assets specifically contributing to sustainable solutions - environmental and social - (e.g., sustainable agriculture, green buildings, lower carbon tilted portfolio, gender equity, diversity).
Impact investing and community investing	<p>Impact investing Investing to achieve positive, social and environmental impacts - requires measuring and reporting against these impacts, demonstrating the intentionality of investor and underlying asset/investee, and demonstrating the investor contribution.</p> <p>Community investing Where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose. Some community investing is impact investing, but community investing is broader and considers other forms of investing and targeted lending activities.</p>

Source: *Global Sustainable Investment Review 2020*

7 References

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