

The illusion of objectivity in the rating agencies' evaluation of ESG impacts and risks: exploring the potential of a new approach to assessing company ESG performance.

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Abstract:

The illusion of objectivity in the rating agencies' evaluation of ESG impacts and risks: exploring the potential of a new approach to assessing company ESG performance.

Asset managers and investors have been slow to respond to climate and environmental issues. This is changing. Growing public awareness, increasing pressure from governments and a climate that is visibly warming have jump-started a new wave of 'Environmental, Social and Governance' (ESG) initiatives, all aiming to incorporate these elements into investment decision-making. To date, ESG data providers have largely focused on offering company-based quantitative metrics to investors. Although helpful, these metrics lack transparency and have been critiqued heavily by academics, industry professionals and increasingly journalists and retail investors. This thesis offers an alternative, more holistic way of understanding a company's ESG impact and management, asking if an approach that emphasises the need for transparency and openly subjective assessments improves investors' ability to make informed decisions on ESG issues. With this in mind, an assessment framework was developed and tested, that evaluates companies against eight criteria, focusing particularly on environmental factors. Fourteen listed equity companies were then assessed using this framework to inform decision-making for a large UK-based asset manager. We found this openly subjective approach provided greater insight for asset managers that allowed them to achieve more effective engagements with their holdings. Moreover, the tool displayed utility in educating asset managers on particular ESG issues as well as in alternative consulting scenarios, where the tool was used directly with the companies in question. Rather than concealing the criteria for assessment, the thesis outlines a structured, evidence-based decision-making process for the assessment of each company. Additionally, the work highlights the utility of embracing the subjective judgement of the ESG researcher within the assessment process, rather than masking this subjectivity in the hopes of increasing assessment objectivity. Although this utility may be limited to specific consulting scenarios, due to the limited scalability and repeatability of these subjective focused assessments.

Introduction:

Asset managers and investors have been slow to respond to climate and environmental issues. This is changing. Growing public awareness, clear evidence that the climate is visibly warming and pressure to transition towards a low carbon economy have all become issues investors are deemed to have a responsibility to address (Ashwin Kumar *et al.*, 2016; IPCC, 2021; PRI, 2021a). These issues are also no longer niche, only to be dealt with by specific positive-impact focused investors, or ethically-orientated funds (Cave, 2020). Instead, it is mainstream for institutional investors to consider non-financial information¹ about their holdings, such as the emissions in a holding's supply chain, or the way it treats its employees, in order to take a sustainable approach to investment (Hübel and Scholz, 2020). In contrast to companies' disclosure on financial information, non-financial data, referred to as Environmental, Social and Governance (ESG) information, is still highly unregulated, unorganised and lacking clear accepted standards to refer to (Eccles and Strohle, 2018). Despite this lack of organisation, demand from investors for ESG data disclosure is growing rapidly. Asset managers have started to integrate ESG information into their investment decision-making process, with over \$120 trillion in combined assets committing to the UN's Principles for Responsible Investment (PRI, 2018), and around \$35.3 trillion invested using strategies that are deemed 'sustainable' (GSIA, 2020; PRI, 2021b).

This rise in ESG integration stems from more recent pressure on asset managers to follow sustainable investment strategies, such as by engaging with companies on ESG issues, or allocating capital to companies that have strong ESG performance over those that don't (Kölbel *et al.*, 2020). Many asset managers now expect holdings to manage and disclose their ESG performance (Dyck *et al.*, 2019), and disclosure initiatives such as the Carbon Disclosure Project have seen a 70% increase in the number of companies reporting environmental data to them since the 2015 Paris Agreement (CDP, 2020). As empirical evidence for ESG performance being reflective of company financial performance grows, and the argument that integrating ESG data into investment decisions can improve returns becomes more

¹ Non-financial information refers to all corporate reported data outside of financial statements and traditional annual reports.

popular, the demand for high-quality and comparable ESG data will likely continue to flourish (Khan *et al.*, 2016).

Due to these trends, investors are increasingly using ESG ratings (obtaining third-party assessments of a company's ESG performance) of companies in order to make investment decisions, with the market for ESG data expected to grow from around \$600 million to \$1 billion between 2020 and 2021 (Foubert, 2020). Despite efforts from several standard-setting bodies and global institutions, there are no fixed regulations on the indicators and methodologies that can be used by ratings agencies to produce ESG ratings. Different agencies can therefore come to different conclusions on the ESG performance of the same company, highlighting the subjective nature of the assessment process. This divergence in ESG ratings is important as it has created an ecosystem of data that has potentially confused, and perhaps in some cases misinformed, investors looking to act upon ESG issues (Delmas *et al.*, 2013).

Both academic and corporate circles have raised evidence-based concerns about the extent to which ESG data is reliable. Several studies have looked to understand whether ESG ratings agencies measure ESG performance accurately and increasingly studies have focused on the technical reasons for and the extent to which ESG ratings disagree (Berg *et al.*, 2019; Dimson *et al.*, 2020; Abhayawansa *et al.*, 2021; Zumente and Lāce, 2021). Others have explored the contextual reasons behind the lack of agreement on how to capture ESG performance, making use of theories of social construction to analyse the diverse origins and motives behind creating ESG measures (Eccles and Strohle, 2018; Eccles, Lee and Strohle, 2020). Specifically, criticism for ESG ratings has focused on the lack of transparency and regulation of ratings agencies and their entirely quantitative methodologies and outputs (ESMA, 2019; Dimson, *et al.*, 2020; Abhayawansa and Tyagi, 2021; Zumente and Lāce, 2021). Given increasing pressure from investors for reliable, comparable and objective data on ESG issues, ratings agencies have attempted to reinforce the objectiveness of their process through their methodologies, with little acknowledgement of the subjective judgement included within an assessment of ESG performance (Boiral *et al.*, 2020; Christensen, Serafeim and Sikochi, 2021; Hughes, Urban and Wójcik, 2021). The subjectivity of ESG rating agencies' assessments is inherent to the construction of ESG ratings and will therefore always be compounded within

their metrics. Yet ESG related marketing and extensive methodologies work to reinforce a sense of objectivity that often provides investors with a misplaced sense of confidence in the data (Boiral, *et al.*, 2020). Concerns have been raised about the ability of ratings agencies to therefore provide a truly objective rendering of complex environmental and social issues, as evidence suggests that subjective inputs from analysts, the structure of raters' methodologies and corporate vested interests all influence ESG rating outcomes (Berg *et al.*, 2019; Boiral *et al.*, 2020; Eccles *et al.*, 2020; Christensen *et al.*, 2021; Tang, *et al.*, 2021). Understanding these subjective inputs is surely crucial to assessing the reliability of an ESG rating and the extent to which it is reflective of a company's impact on society and the environment, yet ESG data providers continue to avoid disclosing their methodologies and operate in largely opaque commercial arenas (Stubbs and Rogers, 2013). Alternative approaches to measuring company ESG performance have been developed, often aiming to increase the objectivity of the assessment through using AI rather than human researchers (Hughes, Urban and Wójcik, 2021) or through efforts to standardise ESG assessment criteria across ratings agencies (SASB, 2018; Jebe, 2019). However, very few attempts have been made to do the opposite and develop a completely transparent and openly subjective ESG assessment that can be used by both investors and companies to understand and engage on a range of ESG issues.

This thesis aims to build on the concerns of investors and the current academic literature to explore the issues surrounding ESG ratings and the potential for a new alternative ESG assessment approach. By recognizing the subjectivity of this assessment explicitly it is expected that its outputs will be of greater utility to investors looking to effectively engage with their holdings on ESG issues. This will be achieved through greater transparency on how certain conclusions were reached about a company's ESG performance, allowing investors to better understand the issues caused by or affecting a company. Moreover, it is expected that this improved understanding will allow the framework to act as a tool to educate investors on certain issues and give them detailed insight that may prompt further research. Equally, it is anticipated that an emphasis on the subjective elements of the assessment will encourage investors to be more considerate of the information presented to them in comparison to the perceived objectiveness of quantitative ESG ratings and therefore spend more time on considering ESG issues within the investment process.

To achieve these outcomes, the thesis explores the varied understandings of what is meant by Environmental, Social and Governance (ESG) information, where these understandings have originated from and how they have changed throughout time. Moreover, the thesis explores whether traditional ESG assessments reflect the impact companies are having on ESG issues, or if these assessments focus entirely on the financial impact of ESG issues on companies. It then reviews the methods deployed by current ESG ratings providers, focusing specifically on transparent methods of ESG assessment that are in the public domain, in an effort to build upon current frameworks.

Following the literature review, the thesis outlines the development of an independent ESG assessment framework. The development of this framework is supported by two groups of key stakeholders: Small World Consulting Ltd (SWC) and SWC's clients. SWC is a sustainability consultancy based in the UK, with significant expertise estimating corporate emissions for a range of multi-national companies and advising these companies on appropriate methods of decarbonisation. They also have helped many large organisations develop responses to the climate and ecological emergency, laying heavy emphasis on the need for in depth and detailed research into these issues. In July 2020, SWC was approached by a UK-based asset management company, referred to as 'Client 1' for confidentiality reasons, looking to better understand how it could incorporate ESG data into its investment strategy. This project was born out of the collaboration between these two stakeholders, drawing closely on resource

and expertise from both. The input from commercial stakeholders is intended to benefit the utility of this ESG assessment framework, as both are driven to test the framework in a real-world consulting scenario. The framework will therefore be tested on 14 listed equity companies held within Client 1's investment portfolios, with the assessment of each company and subsequent development of the framework following an iterative process. Additionally, the framework will be tested with 3 of SWC's other clients: 'Client 2', a UK-based manufacturing research centre; 'Client 3', a UK-based heavy vehicles manufacturer; and 'Client 4', a UK-based restaurant chain. The findings of testing the framework will define the results of the thesis and are intended to answer both the commercial and academic objectives of the project outlined below:

Framework Objectives

1. Develop a framework that is accessible and transparent in its assessment of companies and clearly outlines the subjectivity of the research in the assessment process.
2. Demonstrate the utility of the framework through sufficient testing on 14 listed equity companies and 3 private equity companies within consulting scenarios enabled by SWC.
3. Ensure this framework is of value to investors and companies alike in helping them understand their ESG impacts and improve their ability to manage these impacts.

These objectives are explored throughout the thesis in the development, testing and review of the framework. The extent to which these objectives have been met will be reviewed within the conclusion of the thesis, which will ultimately determine the framework's overall effectiveness at assessing corporate responses to ESG issues. Through testing the framework, it became clear that an openly subjective assessment approach was beneficial for asset managers looking to use engagement as a way of positively influencing their holdings on ESG issues. Moreover, the framework was effective at educating asset managers on these issues which ultimately prompted further research and personal engagement in to better understanding how they affected their companies.

Literature review:

On the surface, ESG appears to be a simple categorisation of data used by investors to understand the impacts companies have on, and the risks presented to them by, environmental, social and governance issues. This is broadly true, and the high-level categories offer a useful way of organising data that has historically been left out of the traditional investment process. The environment category covers issues such as climate change, air and water pollution, deforestation, land exploitation and biodiversity loss. It therefore evaluates company performance on managing greenhouse gas emissions, energy efficiency, land usage and wastewater (The Global Compact, 2004). The social category includes aspects related to human rights, public health, income distribution, labour standards and workplace and product safety. The data points for evaluating company performance on these areas are more complicated, as these issues are not easily quantified, although employee satisfaction and analysis of company responses to specific impact events are commonly used as examples (Halbritter and Dorfleitner, 2015). Finally, the governance category relates to shareholder rights, board independence, control procedures, respect for the law and anti-competitive practices. These areas have an overarching impact on the ability of the company to manage its 'E' and 'S' impacts, with several studies highlighting the positive effect of these practices on overall ESG performance (Lagasio and Cucari, 2019). However, within ESG there is very little agreement about what data should be attached to different categories, which category is more relevant than another, or what the purpose of integrating ESG data into decision-making processes actually is (Kotsantonis and Serafeim, 2019). These disagreements are common within the ESG ratings agency industry, reflected in the divergence of their ratings scores on the same companies and the methodologies they use to assess ESG performance (Berg *et al.*, 2019; Escrig-Olmedo *et al.*, 2019; Dimson *et al.*, 2020; SustainAbility, 2020). There is clearly industry and academic agreement on what the three categories should be, but the conceptual understanding of why or how these categories should be brought together is still contentious. The literature review aims to explore the reasons for this disagreement, exploring the origins behind the concept of ESG, the varied types of ESG investment strategies and how these strategies use ESG ratings and data.

The Origins Behind the Concept of ESG

Early Sustainable Investing

The current ESG landscape has been shaped and moulded by a specific western context, with several large institutions, significant events and societal shifts in values having a profound impact on conceptual understandings of how ESG should be used to achieve certain objectives (Eccles and Strohle, 2018; Townsend, 2020). The story of how the concept of ESG has changed throughout history can be highlighted through a discussion of shifts between an institutional-investor focus on values and value. Early methods of integrating environmental, social and governance data into the investment process were focused on values, in that they were willing to sacrifice the value of their returns in order to attend to environmental or societal issues. Examples of this include the development of Socially Responsible Investing (SRI) amongst religious groups in the 19th century. Notably, the Quaker Friends Fiduciary Corporation, who implemented a screening process on 'sin stocks' such as arms and tobacco in 1898, followed a values-based approach to considering non-financial information on companies they invested in (Barman, 2017). Some investors go further than just screening unethical companies from their portfolios and focus on achieving measurable positive change through their investments. This form of values-driven investment is Impact Investing, where potential societal improvement and sustainability are the core deciding factor in investing in a company or not. Both SRI and Impact Investing therefore have a focus on values, and they use environmental, social and governance data to measure the extent to which they can reduce harm to, and improve the quality of, the environment and society. Thus, the balance between maximising the value of returns and sustainability are weighed in favour of sustainability.

Fundamentally, this balance in favour of values over value disagrees with foundational thinking in the investment industry, reflected by resistance to the development of SRI in the 70s and 80s. As SRI methods like screening became more popular, momentum for increased investor accountability on issues such as civil rights and the environment grew in the 1960s and 70s, in parallel to the rise of anti-war movements and pushes for racial equality. By the 70s, this had led to the creation of the first mutual funds that reflected faith-based values

through the incorporation of environmental and civil rights factors, designed for churches, NGO's and charities (Townsend, 2020). However, these developments were met with resistance from the mainstream investment community, with well-known economist Milton Friedman stating that '*the social responsibility of business is to increase profits*' in the New York Times in 1970 (Friedman, 1970). Additionally, Modern Portfolio Theory, developed by Harry Markowitz in his 1952 paper 'Portfolio Selection', outlined that any restriction to a portfolio on its possible investments, such as by screening for potentially socially-damaging companies, should be completely avoided if the value of returns were to be maximised (Markowitz, 1959). Investors are traditionally concerned with maximising value over values, and it became clear that for the consideration of ESG to become mainstream it needed to be clearly tied to financial performance.

The Late 90s and 2000s

Since Friedman made his comments on SRI in the 1970s there have been several changes that have flipped the notion of including ESG data in the investment process from being a *value*-driven to a *values*-driven exercise. Notably, the growing concern for climate change in the late 90s and early 2000s and empirical evidence that a warming planet could cause significant damage to the financial performance of listed equity companies. Physical climate reviews from the Intergovernmental Panel on Climate Change (IPCC), James Hansen at NASA stating he was "99% certain" that Green House Gases (GHGs) were causing global warming (Shabecoff, 1988) and several climate-related ecological disasters, such as the Exxon Valdez oil spill, all galvanised pressure on large corporations and investors to take climate change seriously (Townsend, 2020). Increasingly, large companies were experiencing a fall in their market *value* as a result of neglecting environmental *values*, such as BP experiencing a 50% drop in share price after the Deep-Water Horizon oil spill, or more recently, Volkswagen experiencing a 30% drop after they cheated carbon emissions tests to make their engines appear less damaging to the environment (Hotten, 2015). Thus growing awareness of the risks of climate change in the late 90s and 2000s created a shift in the investment industry's thinking around the relevance of non-financial information, as it became increasingly obvious that considering this information, alongside financial performance metrics, was essential to achieving long term high *value* returns. This lies in stark contrast to the focus of SRI and Impact

Investing, which uses non-financial information to assess companies against their own moral and ethical *values* in the pursuit of environmental and societal benefits, rather than high *value* returns.

ESG Today

The shift to a *value*-focused usage of non-financial data created a new strand of sustainable investment known as 'ESG Integration', which uses the same ESG data as SRI or Impact Investing but with the intention of increasing *value* not social or environmental *values*. Traditional methods of carrying out investment research and analysis in the late 90s and 2000s were not structured around the inclusion of non-financial data and investors therefore needed a framework for including this information into their decision-making process. Hence the term ESG was born, first defined by the United Nations Global Compact in 2004 (The Global Compact, 2004). ESG investing, in contrast to SRI or Impact Investing, involves the analysis of non-financial company data, such as emissions data, the gender balance of its employees or the governance structures it uses, to make informed predictions as to how a company will perform financially in the future (Bos, 2014). In order to achieve this, the analysis involves the identification of issues that are deemed material to a company's financial performance (Jebe, 2019). This concept of materiality is the core reason ESG investing and SRI or Impact Investing differ, as ESG-integrated investors only include ESG data in their analysis if it is deemed to be relevant, or material to the potential for that company to produce returns for investors (Bos, 2014). Some issues may be more material to one company but not another. For example, a global carbon price would be material for high-emitting companies, such as those that operate in steel manufacture or oil and gas extraction, but less material for low carbon-intensity companies, such as a professional service provider. Materiality therefore displays the fundamental difference between value-driven investment and values-driven investment, as SRI and Impact Investors are willing to focus on ESG issues that are not material to company financial performance but material to environmental and social issues.

There is a growing body of evidence that now supports the financial materiality of ESG issues and the reasoning for mainstream investors focusing on ESG integration as a value-focused activity. In a meta-analysis of 2200 empirical studies that aimed to connect ESG criteria to

financial performance it was found that roughly 90% of studies showed a nonnegative relation between financial performance and ESG, with the majority of studies indicating a positive relation (Friede, Busch and Bassen, 2015). Companies that manage their role in ESG issues have been shown to have more resilience to the financial impacts of the Covid-19 crisis, have less exposure to risks in general and are in a stronger position to engage with stakeholders due to improved reputation (Guido Giese *et al.*, 2015; Fatemi, Glaum and Kaiser, 2018; Broadstock *et al.*, 2020). Investors are also on board with this understanding. In a survey of 652 different asset managers carried out by Amir and Serafeim (2018), 82% said they used ESG information because it was financially material to investment performance. These examples demonstrate a shift from the original discourse reinforced by Friedman (1970), from societal benefits being seen as a side benefit of increasing profits, whereas ESG integration presents an opportunity to increase profits through directly improving society and the environment.

ESG Investment Strategies

The notion that investors can achieve high value returns whilst having minimal negative/positive impact on environment and society has become a popular concept, leading to the development of several investment strategies that focus entirely on company ESG performance (Khan, Serafeim and Yoon, 2016). With a mounting body of evidence and academic literature that supports ESG investment strategies, they are now becoming mainstream investment practice. Global assets committed to the UN Principles for Responsible Investment, which focuses on sustainable investment, have grown from \$20 trillion in 2008 to \$120 trillion in 2020 (PRI, 2021b). The Global Sustainable Investment Alliance (GSIA), founded in 1991, has risen as the global standard for this industry and identifies 7 key strategies used by investors:

1. **Positive Screening:** The selection of the best-performing companies on ESG issues, often within a specific sector or region. This method corresponds to excluding companies that do not meet certain criteria.
2. **Negative Screening:** Exclusion of companies that are deemed controversial or engaged in harmful activities. This is the most popular strategy according to the GSIA, with around \$19.8 trillion in assets under management following a negative screening

approach. It is often seen as the easiest strategy to implement, as it is simple to exclude 'non-ESG' stocks, with tobacco and arms companies often being excluded.

3. **Sustainability-Focused Investing:** Only investing in companies that are key to achieving sustainability goals, mainly focused on climate and low carbon transition companies such as renewable energy providers, climate solutions providers or companies that have a positive impact on society.
4. **ESG Integration:** The inclusion of ESG data from ratings agencies into financial analysis. Heavily dependent on the reliability of ESG ratings. Different ESG ratings will offer a different strategy of investment.
5. **Impact Investing:** Investment performance is measured by the positive impact it has on society and the environment. Often focused on solving particular issues, such as environmental damage, renewable energy usage, social housing investments etc.
6. **Corporate Engagement and Voting Activism:** Exercising shareholder rights in order to influence company behaviour towards positive ESG outcomes. Involves regular dialogue with the company on ESG issues.
7. **Norms-based screening:** Investing in companies that meet the minimum thresholds of ethical business practice.

These investment strategies are often used collectively, with many investors adopting multiple strategies in order to achieve their objectives. This thesis focuses particularly on ESG integration and Corporate Engagement and Voting Activism, as these are the main strategies adopted by client 1. Proponents of ESG integration argue that the inclusion of material ESG aspects in the investment process allows for both a positive impact on the environment and society, and the ability to achieve superior returns, thus driving positive change (Hartzmark and Sussman, 2019). However, there is little evidence to suggest that ESG integration automatically translates into positive impacts on the environment and society. Kölbel *et al.* (2020) argue that ESG integration focuses more on how ESG data has an impact on investment performance, rather than how investors can have a positive impact on ESG issues. Instead, they highlight that investors need to actively seek out opportunities to achieve impact, finding that the most effective mechanism for achieving investor impact is investor engagement, where investors encourage their holdings to take a specific action or change the way they do something, often to reduce harm to society or the environment. However, Kölbel *et al.* (2020)

also find that there is a significant variation in whether investor engagement requests are successful in receiving a positive response, with an estimated probability from 18-60% of success. There are a number of different factors that determine the probability of success, from the size of the share the investor has in the company (Dimson, Karakas and Li, 2012) to the level of ESG experience the company and investor already have (Barko, Cremers and Renneboog, 2017). Several studies also highlight how investor engagement is linked to company ESG ratings, suggesting that positive engagement leads to an increase in the company's rating and therefore drawing a causal link between an improvement in an ESG rating and a positive change in the real economy (Barko, Cremers and Renneboog, 2017; Dyck *et al.*, 2019). This link assumes that ESG ratings are an accurate representation of the way a company is managing ESG issues or the extent to which it has a positive impact on society and the environment. Those that argue for ESG integration on the basis that it can provide both superior returns and positive change also follow this assumption and ESG integration is increasingly becoming more and dependant on the reliability of ESG ratings.

ESG Ratings

As ESG ratings become increasingly popular with investors who are looking to improve their impact on the planet, the concerns around the reliability of ESG data grow. A rapidly-developing body of literature now explores these concerns, examining the transparency, objectivity and effectiveness of ESG integration at reducing corporate impact on society and the environment, regardless of its potential to improve investor portfolio returns. One of the primary reasons for these concerns is the divergence in ratings between different ratings agencies. A recent study by Berg *et al.* (2019) found that the correlations between 6 different ratings providers averaged 0.54, with a range from 0.38 to 0.71. This underlines why the reliability of these metrics has been repeatedly questioned by regulators (ESMA, 2019) academics (Khan *et al.*, 2016; Dimson *et al.*, 2020) and investors (Cave, 2020; IIGCC, 2020), who are all calling for standardisation of ESG metrics. Survey evidence shows that 82% of investment professionals used ESG data at some point in their decision-making process, with 26.4% indicating a lack of ESG rating reliability (Amir and Serafeim, 2018). In contrast, Berg *et al.* (2019) note that divergence of ESG ratings could be desirable for investors, as ratings agencies are forced to compete to provide the most accurate and usable data. Investors may

hold differing views on which elements of ESG they deem material to a company's success and, therefore, choose the ESG ratings they subscribe to on this basis. Standardising ESG assessments could therefore hinder innovation and investment in the ESG funds, as the standardised criteria for assessing ESG may not align with the views of all investors. Additionally, ESG standardisation reinforces the idea that there is such a thing as a 'perfect ESG score' for all companies to aim for. This could be inherently damaging for some companies requiring investment but without the capability to report their ESG data, particularly companies in the developing world. In an analysis of Thomson Reuters' (a leading ESG data provider offering assessments on ~6000 companies globally) ASSET4 data set Drempetic *et al.*, (2020) found positive bias towards larger companies, given they reported more data which traditional ESG assessments are dependent on. Their study emphasises the need to ensure any standardisation of ESG considers the potential impacts this could have on smaller companies, or those based in regions where the effective management of ESG issues is more challenging to achieve.

Another concern around ESG issues is the extent to which it is possible for investors to understand how ESG ratings companies decide what is or isn't material to ESG performance. The subjectivity of ESG assessments has therefore been challenged and potentially represents a stronger argument for standardisation. Stubbs and Rogers (2012) carried out an assessment of Australian ESG data company, Regnan, looking to understand the objectivity, transparency and uniformity of its methods. Regnan uses a 'gap methodology' to assess how companies manage their ESG risks. This involves 2 assessments, one looking at how exposed the company is to ESG risks and the other looking at how they manage those risks. Companies are scored from 0-5, with 5 being good and 0 being no disclosure. The 'gap' refers to the difference between the two scores of each assessment. However, the process behind deciding on these 0-5 scores is inherently dependant on subjective judgement of the analyst. Regnan attempts to counter this by incorporating a peer review process of all ratings, and also regularly reviews its process but the inherent decision is still heavily dependent on the analysts' experience and judgement (Stubbs and Rogers, 2013). Moreover, Regnan often adapts its process for individual clients and has little motive to publish its methodology publicly as this forms a core part of its IP and competitive positioning, thus hindering its ability to achieve uniformity and transparency across its ratings. The subjectivity of ESG assessments is also highlighted in Tang,

Yan and Yao (2021), who explored the connection between positive ESG ratings and corporate conflicts of interest. The foundation of their assessment was driven by evidence of credit ratings agencies rewarding firms with inflated ratings that ultimately led to the 2008 financial crisis. They found that firms held by the same owners as the ESG raters, or “sister firms”, were given higher ESG ratings than those that weren’t, potentially contaminating the accuracy of these ESG ratings. Although some level of subjectivity is inevitable, within the assessment of the ESG ratings, a lack of standardisation enables individual researcher’s views to affect the overall output of the assessment. If these views are potentially biased, especially in favour of a rater’s own financial interests, then the poor reliability of these ratings could seriously hinder investors’ ability to allocate capital to companies having a positive impact on society and the environment.

Other studies have questioned the extent to which ESG ratings are truly reflective of the real-world impact companies have on ESG issues at all. In some cases, ESG ratings are focused on the opposite and assess the extent to which environmental factors present a risk or opportunity for the company. A recent investigation carried out by Simpson et al., titled ‘The ESG Mirage’, explored the ratings methodology of the world’s largest ESG data provider by market capitalisation, Morgan Stanley Capital International (MSCI). They analysed every ESG rating upgrade MSCI had awarded to S&P500 companies from January 2020 to June 2021 and the reasoning behind each upgrade, totalling 155 companies. They found that companies were regularly upgraded for environmental reasons, without clear justification of the upgrade, giving the example of McDonalds, a global fast food restaurant, receiving an upgrade because “climate change neither poses a risk nor offers opportunities” for the company’s bottom line (Simpson, Rathi and Kishan, 2021). The assessment therefore focused more on the effects of climate change on the company, than the impact the company has on climate change through its emissions. Only 1 of the 155 upgrades were based on a company cutting its emissions, raising the question of the extent to which MSCI’s ratings are actually a good reflection of a company’s climate impact at all? Simpson *et al.*, (2021) also highlighted that this approach differs greatly from MSCI’s marketing, which emphasises the benefits of using its metrics for understanding corporate impact on the environment and society (MSCI ESG Research, 2021). They further estimate that MSCI data is used by around 60% of global sustainability/ESG orientated funds, thus representing a significant chunk of the total market.

Subsequently, the focus of ESG ratings may not always be on how companies have an impact on the planet and following ESG integration is a more effective way of hedging investments against ESG risks, rather than attempting to manage investment impact or push for a sustainable future.

The clearest evidence for the concerns with the reliability of ESG issues come from the raters themselves. (Boiral, Talbot and Brotherton, 2020) explore the doubts ESG practitioners have about their own ratings and the methodology behind them, arguing that many ESG ratings present a 'rational myth'. By this, Boiral *et al.* (2020) highlight the disparity between the 'image of rationality, formalism and intellectual rigor' that ESG raters attempt to project by adopting 'superficial structures and systems perceived as legitimate on the one hand, and the organisation's real practices on the other'. This rigour is reinforced by quantification of the assessment process and its outputs, as the datafication of complex ESG issues into measurable metrics and statistics restores the faith investors have in the objectivity and rationality of the assessment (Kennedy and Hill, 2018). They interviewed a total of 19 ESG data providers and 13 ESG data users, with questioning focusing on the extent to which ESG assessments could really be seen as robust and reliable measures of company's impacts on ESG issues. The respondents noted four interrelated reasons that undermined this rational myth of robustness: dependency on unreliable data, the unpredictability of sustainability issues, methodological differences in the assessment process and the subjectivity of assessments. Half of the respondents mentioned greenwashing in disclosure from companies and how challenging and time-consuming it is to verify information companies disclose about their environmental impacts. Boiral *et al.*, (2020) interviews demonstrate how the legitimate rhetoric the ESG ratings industry markets itself under is largely dissociated from raters' internal practices. As demand for ESG data continues to skyrocket, greater pressure will be placed on ESG raters to improve their robustness and assess more companies, potentially hindering their ability to provide reliable and trustworthy data. This therefore begs the question of the extent to which investors, and stakeholders of companies in general, can really trust ESG ratings as an effective measure of corporate sustainability performance? Moreover, given that issues of subjectivity and data reliability are so inherent to the process of assessing company impacts on ESG, is there a way to resolve these issues, or are they destined to define the assessment of corporate environmental and social issues?

Alternative ESG Assessments

Several alternative methods of assessing ESG performance attempt to deal with the inherent issues of subjectivity and data availability which undermine the reliability of ESG ratings. One interesting example comes from the use of Artificial Intelligence (AI) in order to carry out ESG assessments, replacing the traditional method of data collection, analysis and presentation being carried out by a human researcher. A recent study carried out by (Hughes, Urban and Wójcik, 2021) explores the differences in these two methods, testing both MSCI data against an AI provider, Truvalue Labs (TVL), on two case study companies. They found that the MSCI assessment relied heavily on the disclosure of the company under assessment, whereas the TVL assessment used no company disclosure and only analysed external sources of 'big data information' that were available online. Furthermore, the ratings also weighted the importance of ESG issues differently, with MSCI using a subjective process to assign weights and TVL basing weights on the volume of information available about different issues, potentially presenting a more democratic weighting system that is based on public opinion. The TVL AI process has the potential to remove the reliance on potentially unreliable company disclosure that respondents within (Boiral, Talbot and Brotherton, 2020) noted as a key issue undermining the reliability of ESG assessments. However, its alternative data source is potentially even less reliable, given the potential for fake news and greenwash to feed into the assessment. The AI has limited ability to assess the truth of these statements, which could further undermine the ESG ratings it provides. Despite this issue, the potential for AI to improve the depth of ESG rating's data collection process to extend beyond just company-disclosed information is promising, but does not currently represent a more reliable methodology than traditional human assessments.

Other alternative methodologies have focused on improving transparency whilst refining the human assessment process to reduce the level of subjectivity in the assessment. A prime example is the Transition Pathways Initiative (TPI), an asset-owner led initiative that assesses the extent to which companies are ready to transition to the low carbon economy. The TPI therefore only focuses on climate-related issues, assessing both how a company manages its carbon and whether the company's emissions intensity and proposed decarbonisation plans are aligned with specific warming scenarios, such as the Paris Agreement 1.5°C scenario. The

former assessment uses 19 questions grouped in to 4 levels of company performance. These are organised in a staircase fashion, in that a company cannot progress to a higher level without first achieving all the levels below it. The 19 questions are therefore structured as a progression, in that questions 1-5 focus on basic issues, such as whether the company has acknowledged the climate crisis publicly. Further up the staircase, questions 14-19 focus on specific management strategies companies should be taking to decarbonise, such as linking executive remuneration to decarbonisation goals or setting an internal carbon price (Dietz *et al.*, 2021). Importantly, all of these questions are published publicly, the results of the assessment are available for free online, and the assessments are updated regularly, covering a wide base of some of the most carbon-intensive industries globally. This transparent approach has garnered support from 118 investors managing more than \$40 trillion in combined assets and the simplistic nature of the tools assessment and process provides clear information for investors. However, despite its utility, the TPI only offers a yes/no assessment of whether a company manages its impact or not, without exploring the detail of how it manages this impact. For example, a company could be rewarded within the TPI methodology for setting a decarbonisation target, but this target may not cover a company's full emissions or align with ambitions to decarbonise the global economy. This sets a dangerous precedent, as a company could be deemed to be managing its climate impacts well when looking at TPI scores, when in reality, its management strategies may only be surface level. The simplistic method deployed by the TPI therefore removes the subjectivity of assessing these issues by using the definition of the questions it asks as the main tool of assessment, rather than the researcher's judgement. Moreover, it relies heavily on the company's disclosure being reliable, which without standardised disclosure practices is potentially unlikely.

Designing an alternative framework

Investors have understood the potential for their actions to have a positive impact on society and the environment since the late 19th century. However, it appears an effective method for understanding these impacts through the companies they invest in is yet to exist. ESG ratings often struggle to find the time and resource to investigate these companies' impact in detail, making them prone to being influenced by greenwash and poor disclosure. The literature

review highlights that no framework has yet to find the healthy medium of a transparent, detailed and openly subjective assessment that can also assess ESG issues at scale.

Framework Design and Development

This thesis aims to develop an assessment framework that meets the needs of investors in assessing the impact companies have on ESG issues. Building on the current academic literature on ESG ratings, it intends to provide a method of assessment that offers both significant detail on relevant ESG issues whilst also maintaining a transparent and openly subjective approach. The framework also aims to be of utility to investors and companies alike, offering meaningful assessments that can facilitate engagement between the two and ultimately improve corporate ESG performance.

To achieve these aims, two core versions of the framework were developed, tested and presented to Small World Consulting's clients. These versions can be divided into the Preliminary Framework and the First Revision Framework. The iterative development process guides the structure of the research project, whilst also benefitting its commercial value, as each test version could be used with SWC's clients. The framework's utility was aided by this process, as its development was dependent on its usage in consulting scenarios, thus preparing the assessment for use in day-to-day client settings. This is also the approach taken by many other climate-orientated assessment frameworks, who release updated methodologies on a regular basis, aiming to build upon previous versions (Dietz *et al.*, 2018; CDP, 2020). Furthermore, an iterative development process allows for the framework to be more flexible to new information and findings, which is imperative to ensuring that it remains relevant in both the fast-moving industry of ESG investment and the academic arena of climate and environmental science.

Table 1 summarises the iterative process that was followed during the project, as well as the objectives of developing both versions. The framework's development was also dependent on the input from SWC's clients, with the specific clients involved in each stage of the framework displayed in table 1. Client 1, an asset manager, had significant input throughout the framework's development. They provided core feedback on the utility of the framework

for the investment industry, whilst also allowing the framework to be tested on the companies they invested in. Table 1 also displays the objectives of the literature review, as these were crucial to ensuring that the development of the framework was informed by, and comparable to, existing ESG assessments. The iterative process behind the development of each version of the framework is summarised again in Figure 1. The diagram highlights the connection between developing the framework and testing the framework, as no attempts were made to develop a new version of the framework prior to testing.

Explaining how this process was carried out is vital to the transparency of the project and to ensure that the framework does not suffer from the opacity that makes many other ESG ratings confusing and unreliable for investors (Eccles, *et al.*, 2020; Abhayawansa and Tyagi, 2021). Figure 1 also displays how the results of testing the preliminary version of the framework were paramount to the development of the first revision. This therefore validates the structure of this chapter in following the chronological order of the framework's development, first explaining the method and results of testing the Preliminary Version and how the results of testing this version ultimately justified the changes to achieve the first revision.

Given the objective of the framework in highlighting the subjectivity of developing, testing and presenting assessments of companies, Figure 1 also shows the expected subjective inputs throughout the development process, as highlighted in the yellow boxes. This input comes from three key stakeholders: the researcher, SWC's director and client 1. Primarily, it is expected that the preliminary design of the framework will rely heavily on the views of these stakeholders, as a parallel objective is to develop a framework that meets their needs. Equally, the preliminary version of the framework is intended to act as a test for whether the views these stakeholders have about the best way to assess ESG performance can provide meaningful results. Factors that may have influenced these views are the experiences of the stakeholders in assessing companies in the past but also the origins of the institutions they work for, as displayed by (Eccles and Stroehle, 2018) in their exploration of how the social origins of ESG raters impact the results of their assessment.

Following the development of the preliminary framework, it is expected that the subjectivity of the assessment process will be demonstrated by input of the researchers' judgement on different ESG issues for the companies tested. The subjectivity of the researcher has been identified as an issue for the reliability of ESG assessments within the literature review, especially by the ESG researchers interviewed by Kennedy and Hill (2018). It is therefore vital to understand how these subjective inputs potentially influence the overall score of a company and the extent to which the assessments outcomes are dependent on the researcher's experience and judgement. This also influences the frameworks utility, as if the framework is dependent on individual conclusions, then this makes it challenging to scale and use with a variety of researchers. Figure 1 then also highlights how the results of from these assessments are likely to be interpreted differently by different stakeholders, which will therefore affect the continual iterative development process, as the utility of the results will determine the changes made to improve the framework.

| Design & Development | Timeline | Stakeholders | Objectives |
|---------------------------------|------------------|---|---|
| Literature Review | Oct 21 – Feb 21 | N/A | <p>Understand the key themes that underline available ESG assessments</p> <p>Explore and summarise the literature on ESG ratings</p> <p>Understand the methodologies used by available ESG assessments</p> <p>Define potential knowledge gaps in current ESG frameworks</p> |
| Framework Preliminary Version | Feb 21 – July 21 | Client 1 | <p>Decide on the key principles that will underline the framework’s design</p> <p>Develop a clear structure of assessment that allows for key principles to be tested</p> <p>Establish boundaries to the scope of the assessment</p> <p>Define the criteria for each area of the assessment</p> <p>Develop a way of presenting the final output of the assessment</p> <p>Test the principles, structure, scope, criteria, and output of the assessment on 8 companies provided by Client 1</p> <p>Present the findings of testing to Client 1 and explore their utility</p> |
| Framework Final Version | July 21 – Dec 21 | <p>Client 1</p> <p>Client 2</p> <p>Client 3</p> <p>Client 4</p> | <p>Review the findings of testing the Preliminary Version</p> <p>Adapt the framework based on the review of the Preliminary Version</p> <p>Incorporate suggested changes from Client 1</p> <p>Test the framework again but with Clients 2, 3 and 4</p> <p>Test the framework again but with 8 more companies from Client 1</p> <p>Present the findings of all testing to Clients 1, 2, 3 and 4</p> |

Table 1 – Table displaying the iterative process of the framework’s development, with each stage of the project being outlined with a clear timeline, client involvement and list of objectives.

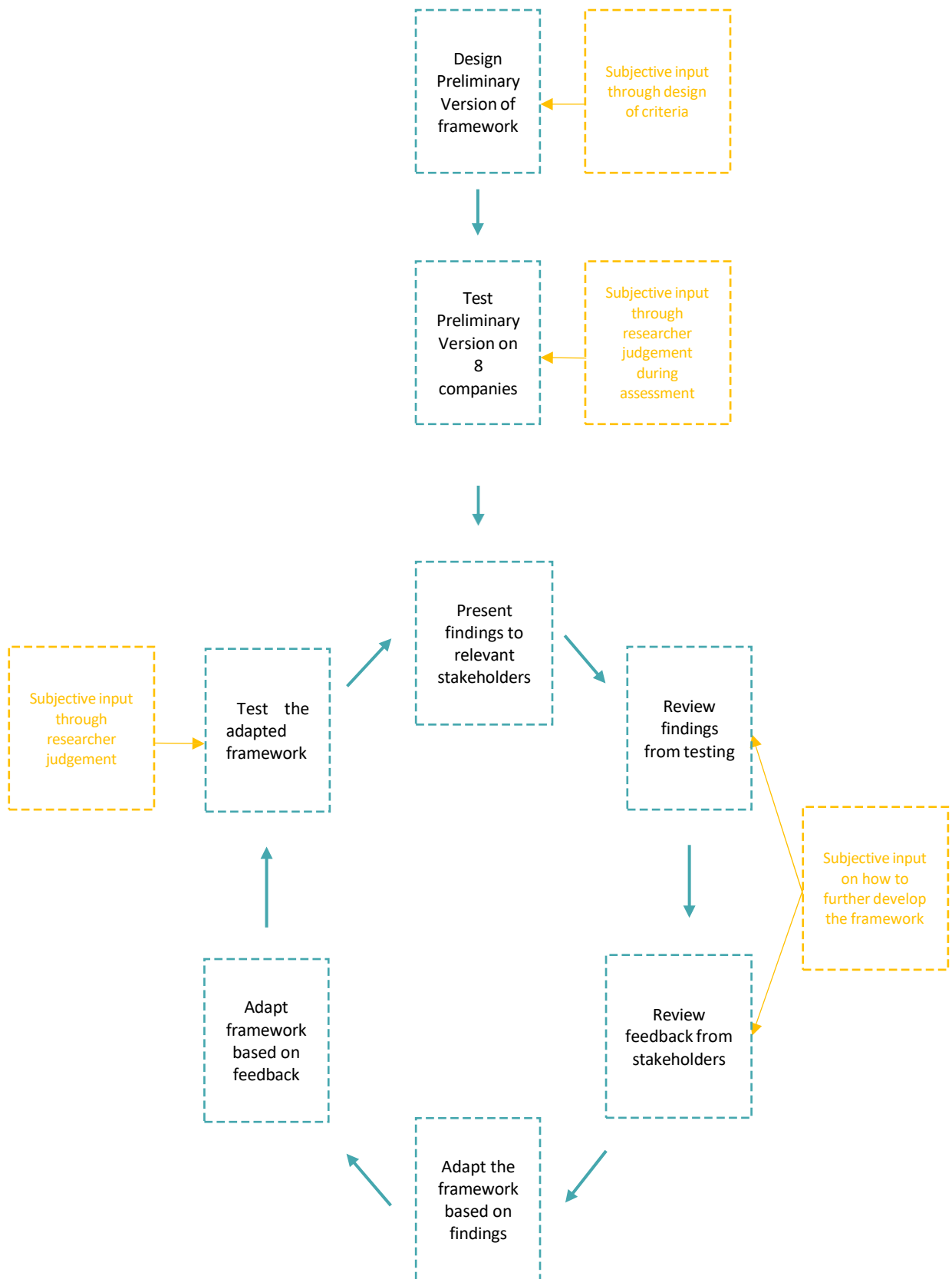


Figure 1 – Diagram displaying the method of framework development and the iterative process behind each version of the framework.

Preliminary Framework Structure

Despite the objectives of developing a framework that clearly highlights the subjective inputs in its construction and use, there is a need to have a clear structure to the framework's process of assessment and development. Without a clear structure, the assessments would be flexible enough to be entirely opinion based. Although Kennedy and Hill (2018) highlight that the complex structures of ESG ratings often reinforce the 'myth of rationality' they aim to portray, these structures are also essential to developing an organised and coherent assessment. The framework therefore needs a clear structure that can be followed easily, but still emphasises the subjective input of the researcher in its creation and use. This structure would remain the same across each version of the framework and therefore ensure some comparability, so the testing and review process could be carried out efficiently and provide meaningful results. The structure was also designed to benefit the accessibility of the framework and to ensure it aligned with existing frameworks and data sources identified in the literature review, such as the Science Based Targets Initiative (SBTI), Carbon Disclosure Project (CDP) and Transition Pathways Initiative (TPI). Figure 2 summarises the organisation of this structure into 5 areas, with each area displayed within the dashed rectangles.

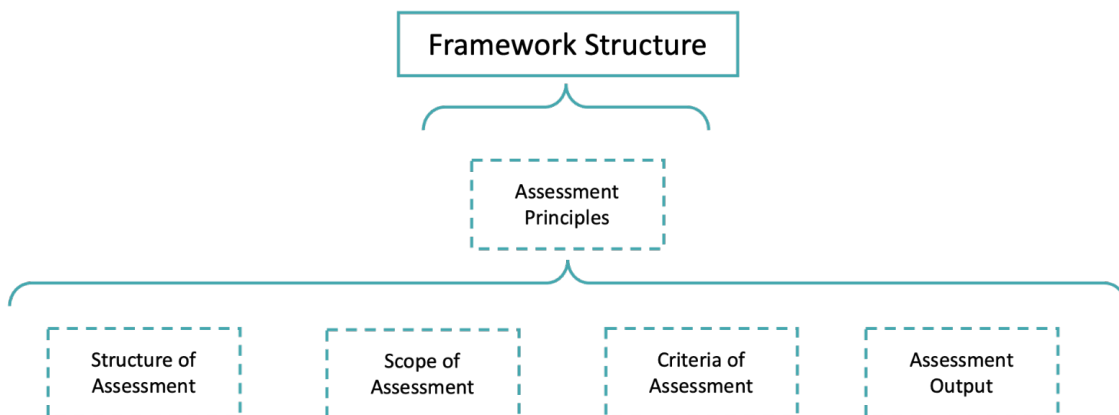


Figure 2 – Diagram displaying the high-level structure of the framework and the 5 different categories that remained the same across different versions.

Key Principles:

The design of the Preliminary framework focused on the establishment of 'Assessment Principles', which Figure 2 illustrates having an influence over the 4 other areas of the framework's structure. Establishing core principles to guide the assessment of companies was a priority for the development of the framework for 2 reasons. Although the subjectivity of the framework's assessment is central to this thesis, a framework without a clear structure is unlikely to offer valid conclusions on different company assessments. These principles are intended to prevent the framework straying too far from the original objectives and to make sure all companies are assessed fairly and coherently, to the best of the framework's ability. Without these principles, it would likely be challenging to compare the results of each iterative version of the framework, which would further limit the frameworks development. In effect, the principles are designed to organise the judgement of the researcher, providing some limit to the extent to which their opinion and biases can dominate the assessment outcome. Thus ensuring that the researcher makes evidence-based conclusions, whilst also providing a loose enough structure for changes to be made to the framework's assessment process. Secondly, the literature also highlighted the importance of high-level principles to guide the assessment process, as they were a key feature in the structure of currently available assessment frameworks. Establishing high level principles ensured that the framework both aligned with these current assessments but also diverted from them enough to remain innovative.

The preliminary version of these principles, and the justification for their design, are as follows:

1. Companies should be assessed using only publicly available data

To ensure the subjectivity of assessing companies against a set of pre-determined criteria is clear, it is essential that the data used can be accessed by anyone with an internet connection. Using data withdrawn from the public domain would hinder the ability to explain the process of assessment clearly and in detail and thus a transparent and accessible evidence base is needed. Using public data ensures that companies are assessed consistently, whilst also

placing emphasis on the need for companies to disclose more information, which remains an issue for anyone looking to understand ESG performance (Christensen *et al.*, 2021). The literature review highlighted issues with solely relying on company-disclosed public data, as this cannot always be taken to be true (Hughes, *et al.*, 2021). Therefore, the framework will also use external sources of information to build the assessment of each company, such as independent reports, media articles and other forms of online information relating to the company's ESG performance. It is expected that the researcher should be able to determine the reliability of these sources and where reliability might be questionable, extra research into specific issues should be undertaken.

2. Polar assessment questions should be avoided or only included to benefit data collection

More commonly referred to as 'yes/no questions' this principle focuses on the desire for the framework to provide more detail about company performance than confirmation of whether it does something or not. For example, it is simple to ask if a company has a set target to decarbonise its emissions and easy to reward a company for doing so. However, rewarding companies that have simply set a target to decarbonise, without asking about the quality, scope, or ambition of this target, runs the risk of rewarding companies that have not considered these factors. By avoiding the inclusion of questions that only can be answered with little explanation, the researcher using the framework is encouraged to provide more detail on why a company's target should be rewarded within the framework's scoring system. Hence the researcher must explain why their subjective judgement of a company can be evidence by that companies' actions in significant detail, rather than offering an ESG score without full explanation, such as those demonstrated by MSCI. This principle attempts to build on the approach taken by other assessment organisations examined in the literature review, such as the Transition Pathways Initiative (Dietz *et al.*, 2021).

3. Assessment indicators should be evidence-based

Anyone using the framework, or the outputs from the assessments developed through its use, should be able to understand why a company has ranked the way it has on all areas of the assessment. Following this principle ensures that the conclusions of the framework are traceable and reliable, whilst also encouraging greater transparency in the decision-making process used to score companies against a set of criteria. This avoids the assessment of the framework being completely subjective, as the researcher is required to back up their assessment with a clear evidence base.

4. The outputs of the assessment should be of value to Small World Consulting and financial services providers

The framework must demonstrate utility for a range of stakeholders, from those with significant expertise on climate and the environment, such as SWC employees, to financial services providers with comparatively little expertise and resource in these areas. Without clear utility, it is unlikely the framework and its outputs will be used by investors and companies alike, and it therefore is essential that industry inputs from SWC and its clients are considered throughout the process of development.

5. The framework should build on already existing frameworks as far as possible, without compromising on other principles

It is important to recognise that this framework is not the first attempt to assess company ESG performance and several helpful frameworks already exist. Examples include the TCFD, CDP and the TPI. Aligning the language and data points used within this framework is beneficial for both the project and global ambitions to pressure companies to take impact on climate and the environment seriously. Investors and companies are more likely to understand and use the framework if it relates to assessments they have already been using. Additionally, the number and variety of assessments already in use is often overwhelming for investors, and this framework should work to build on other assessments in order to avoid just adding to an already-existing knowledge base.

6. The framework covers an assessment of every element SWC deems material to company ESG performance

Both SWC and Client 1 have priorities when it comes to understanding the impact and management approach companies have on environmental and social issues. Rather than attempting to cover every possible element of the ESG framework, this framework should focus on a subset of indicators that are deemed material by SWC. What is deemed material may not be fixed, as the literature review has shown that the materiality of ESG issues changes with time and experience (Eccles, Lee and Stroehle, 2020; Townsend, 2020). It is important for SWC that the framework aligns with its values, as it is unlikely to be used by SWC employees if there is a disparity between the assessment and SWC's knowledge of ESG issues.

7. The framework should aim to focus on the impact companies have on society and the environment, and not entirely on whether changes to society and the environment impact companies.

The literature review highlighted that ESG ratings focus largely on financial risks to firms, rather than the risk of firms causing negative impacts to society and the environment. Although this assessment focus may be beneficial for identifying companies with potential to provide significant investment returns, it does not benefit an understanding of how they are having an impact on these changes. For example, a shipping company may benefit from faster trade routes opening as Arctic Sea ice melts, therefore presenting an opportunity as a result of environmental change. However, an assessment only focused on risks and opportunities avoids the impact that this new trade route might have on local fauna and flora, or whether the extent to which the shipping company itself is responsible for the damage that enabled the sea ice to melt. This assessment framework aims to focus on the latter, with some consideration given to the extent to which the company is managing its environmental and societal risks to its bottom line, as it is potentially just as damaging for a company to go bust in attempting to manage its ESG impacts.

Scope of Assessment:

Following from the design of the framework assessment principles, the development of the Preliminary Framework focused on defining the scope of the overall assessment. The assessment principles guided this definition, following principle 7 to ensure that the scope of the ESG issues covered in the framework were material to SWC and Client 1. The scope of the assessment was also informed by the literature review, highlighting the common themes between the scope of different ESG ratings as well as the areas where potential knowledge gaps could be filled by the framework. The aims of establishing a clear scope to the assessment were to ensure that data collected on company ESG performance could be organised around a clear set of indicators and that there was already sufficient data in the public domain that could be organised around these categories. Guaranteeing the latter was essential to the commercial viability of the framework before further resource allocation from SWC, as without adequate, publicly available data the framework would have little to assess. Equally, access to sufficient, publicly available data was essential to aligning with principle 1 ensuring that the judgements made by the researcher on the evidence base available to them could be followed in order to understand their subjective input. Moreover, the scope of the assessment was heavily influenced by the views and experiences of SWC and client 1, reflecting further subjectivity in the framework's development.

Figure 3 highlights the first attempt at defining the scope of the assessment, displaying three early high-level areas of assessment: Climate change impact, Anthropocene fitness and Adaptability to transition. The diagram shows the high-level assessment areas above the assessment questions used to assess each area, marked as 'A, B, C' etc. These questions were used to loosely guide the assessment but indicators for each question, a process of assessment and a final assessment output were not established during these early stages. The reason for this was to test the concept of the assessment at a very high level before further resource was invested, given the concerns about data availability that had been emphasised by the literature review.

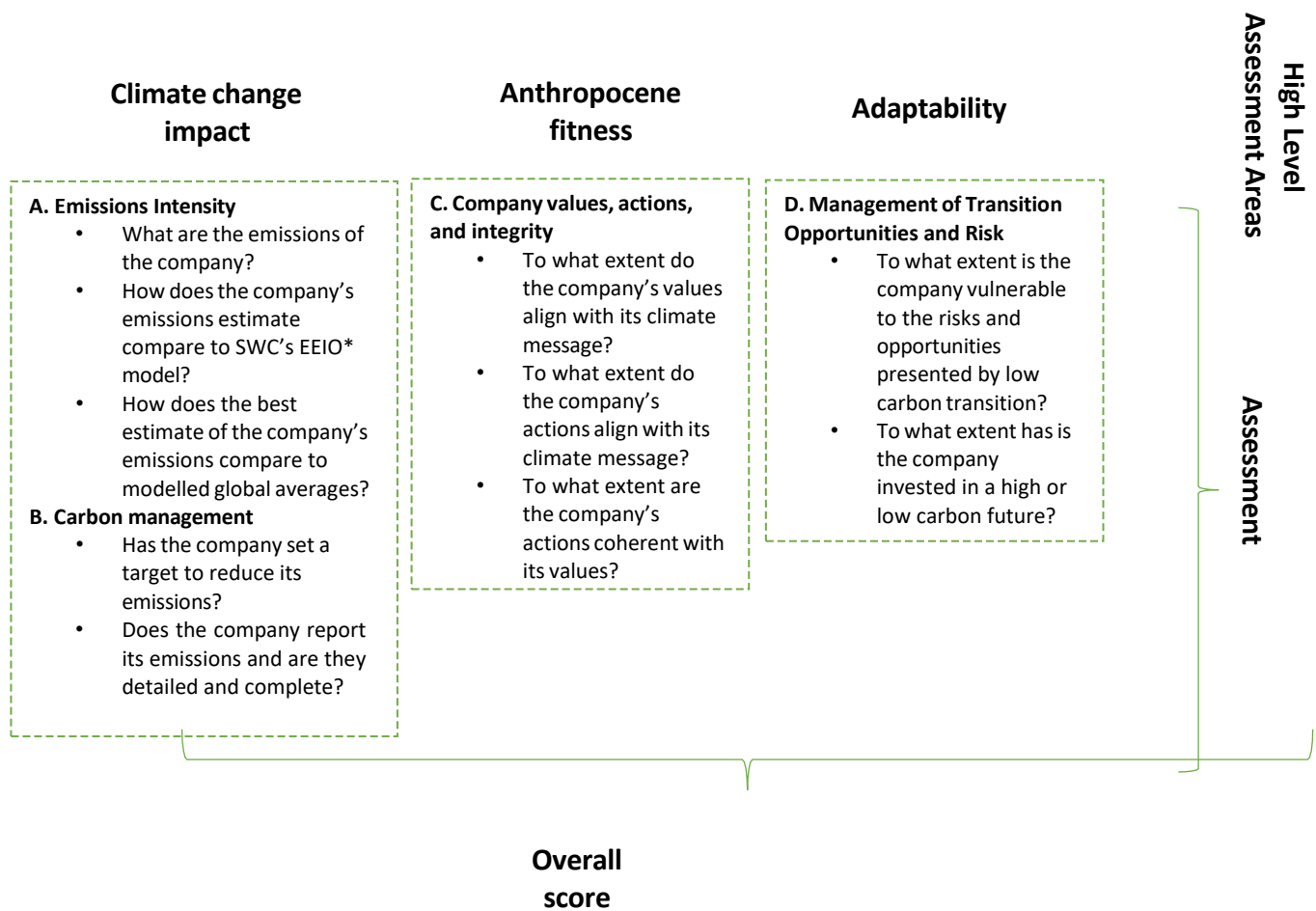


Figure 3 – Text boxes showing the original scope of the Preliminary Version of the framework, divided in to 3 high level assessment areas that are supplemented by 5 assessment questions.

The brief testing period was fruitful, confirming that theoretically, the questions developed with SWC could be answered using publicly available data, and within SWC's resource. However, upon consultation with Client 1 prior to further testing, it became apparent that there were three key issues with this early version of the framework's scope. Firstly, the Climate Change Impact assessment was made up of an assessment of both the company's estimated emissions intensity and how the company managed its emissions. Combining these two assessments together in to one overall output limited the ability to show variation between companies that have a high emissions intensity and good emissions management, or vice versa. Reflecting the reasoning for a company's assessment outcome is emphasised within principle 3 of the framework assessment principles and it was therefore decided that a better way to assess a company's climate impact would be to separate the assessment of emissions intensity and carbon management.

Secondly, there was obvious overlap and potential dependency between each assessment area. This initial concern with overlapping assessments focused on the impact overlap could have on the overall assessment of the company. For example, overlap was particularly clear between assessment area D and the other areas (see Figure 3), as the opportunities and risks presented to a company by the low carbon transition were effectively already being assessed within sections A, B and C. Following the example, if assessments A, B and C reveal that a company has a high emissions intensity, poor carbon management, or does not align its actions with its values, then these assessments give an indication of the risk and opportunity presented by low carbon transition to that company. High emissions intensity potentially presents a risk to the company in the form of carbon pricing, poor carbon management damaging the company's reputation, or an incoherent narrative between the actions and values of the company that could discourage trust in any of its climate ambitions, thus presenting a further risk.

Finally, the higher-level assessment areas were deemed unnecessary to guiding the overall assessment. Although useful in the early stages of developing the framework's scope, there was concern that these areas, combined with the assessment questions (see Figure 3), would confuse those with less climate-related experience about the intention of the assessment. This was supported by experience of attempting to explain the preliminary framework process to SWC's clients who had limited understanding of managing their emissions or environmental impact. The decision was made to make alterations to the preliminary framework before testing, in order to resolve these issues and conserve resource in the time taken to assess actual companies. As a result, it was decided that the framework's scope would instead focus on establishing just assessment questions, that would be headlined in a similar way to areas A, B, C and D in Figure 3.

Following these changes, the preliminary version of the framework's scope was divided into 8 areas of assessment, each of which defined by a specific research question intended to guide the scope of the assessment. Table 2 outlines the title of each assessment area and the specific assessment questions they intended to answer. These questions were designed aiming to ensure they would provide open answers that would benefit the detail of the assessment, rather than offering binary yes/no responses. The decisions on which questions

were appropriate or would offer an effective way of setting up the assessment of a company, were based on internal discussion between SWC, client 1 and the researcher. The subjective views of each stakeholder were therefore considered on each area, with a peer review process ensuring that all of these stakeholder's expertise were incorporated.

Input from SWC's carbon accounting experience was essential to designing these questions, particularly with the more carbon-focused areas such as Emissions Intensity, Carbon Accounting and Carbon pledges. Ensuring that the framework's scope covered the full breadth of a company's emissions, how those emissions are reported and what the company is doing to reduce them was a key requirement from SWC to ensure the framework was aligned with its consulting experience. Additionally, these three areas are crucial to understanding how the company is working towards achieving global emissions reduction goals and whether they are genuinely decarbonising as fast as they can. SWC's experience supporting companies in setting decarbonisation targets, as well as deploying its own methodology to estimate carbon emissions, was fundamental to the development of these three areas.

Some areas remained more experimental in their focus, such as Climate Narrative and Climate Coherence, which inherently focuses on assessing the company's public narrative on the climate crisis and whether they are sending a positive message that calls for greater action. Including this assessment in the framework was supported by the rise of large companies making statements on their commitment to tackling the climate crisis (Dawkins and Fraas, 2011). Companies often provide no clear way to understand whether these statements are meaningful or not. Equally, very few of the ESG ratings and assessment providers reviewed in the literature offered a way of assessing whether these statements were truthful. Given the distrust of ESG ratings and the data companies provide that are used in their construction, it was therefore important to have an area that assessed whether a company could really be trusted on its climate commitments. This assessment area was designed to be more subjective in comparison to the emissions intensity area, as the extent to which companies claims on climate are meaningful or not is inherently up to the judgement of the researcher (Kennedy and Hill, 2018; Berg *et al.*, 2019).

Two areas of the framework had a more specific focus, influenced by the subjective input of Client 1. Firstly, Low Carbon Enablement Potential explored the extent to which the company could 'enable' emissions reductions for its customers (downstream) in the future. 'Enable' is used carefully as often it is very challenging to measure the emissions associated with the use of a company's product, depending on the product in question. For example, some products have very specific uses, such as iron ore, which can only really be sold to be smelted into steel. Estimating the emissions of iron ore's usage is therefore much simpler than estimating the emissions of a car or a product that can be used in multiple different ways, as the method of using the product determines the potential emissions associated with that usage. To deal with the uncertainty of estimating downstream emissions, Low Carbon Enablement focuses on whether the company can theoretically enable emissions reductions for its customers, rather than trying to estimate these emissions specifically. The area was still deemed important to the overall assessment as downstream emissions often represent a significant portion of a company's total emissions (Lee and Park, 2020) and it was therefore critical to capture what a company was doing about these emissions, if a full assessment was to be achieved. Furthermore, it is expected that some companies' entire purpose is to enable emissions reductions, such as an electric vehicle manufacturer or a plant-based protein producer, and therefore the effort these companies are making to reduce these emissions should be included within the framework's assessment. This assessment is also heavily dependent on the judgement of SWC and the researcher, given the uncertainty around the extent to which companies can enable emissions reductions.

Secondly, the Climate Adaptability assessment area focused on the extent to which the company is prepared for the policy and economic implications of the climate crisis, and how well it might be able to adapt in order to mitigate these risks. This area takes a different approach to the other 7 assessment areas as rather than assessing how the company is having an impact on climate or environmental issues, the focus is on how these issues might impact the company. This assessment area was included for two reasons. Primarily, many other ESG assessments and frameworks take this approach to assessing company ESG performance and therefore to align with principle 6 and to ensure some comparability with existing frameworks this area was included. Additionally, Client 1 expressed the importance of this area to its own understanding of its holding's involvement in the climate crisis and how this understanding is

shared across its industry. Ensuring the utility of the framework to SWC's clients was an important part of developing the framework and thus justified the inclusion of the Climate Adaptability area. This assessment area does not align with principle 7, but a decision was made to test the methodology of this assessment area and explore if it offered any useful insight on the company's actions to manage its impacts.

Finally, the Wider Impact assessment area offers a way of assessing a company's impact on non-climate issues included within the high-level Environmental, Social and Governance framework. These include the company's impact on biodiversity, water and pollution, as well as how the company impacts the people affected by its business, such as employees, local communities and society in general. Given the climate/emissions focus of SWC's work, as well as the requirements of Client 1, these areas were given less priority within the preliminary version of the framework, with the intention of developing them following the first test stage. Client 1 expressed concern about the inclusion of these areas, given that SWC did not have extensive experience in working with companies on wider environmental and social issues at the time of the framework's development and that Client 1 already carried out a significant amount of its own research into these issues. This raises an important point about expertise, in that client 1 was willing to embrace greater subjectivity on assessments where SWC was deemed to have more experience, such as Climate Narrative and Low Carbon Enablement, but less willing to accept this subjectivity on areas where SWC's experience was lacking. Despite this, a compromise was reached, with the assessment focusing on flagging environmental and social issues associated with the company's activity, searching specifically for issues that may have been missed by Client 1's research team.

| Assessment Area | Assessment Question |
|---------------------------------|--|
| Emissions Intensity | What is the company's operational and upstream emissions intensity in grams per CO ₂ e per US dollar, normalised by its revenue in the most recent reporting year? How does the company's emissions intensity compare to relevant averages? How does the company's published emissions intensity estimate compare to SWC's estimate and can potential differences be explained? |
| Low Carbon Enablement Potential | To what extent does the company have potential to enable emissions savings for its customers in the future? |
| Carbon Pledges | Has the company pledged to reduce its operational and upstream GHG emissions and if so, does it cover the full scope of the company's emissions, is it ambitious and does the company have a clear strategy to achieve it? |
| Carbon Accounting | To what extent does the company transparently and adequately disclose the full scope of its emissions and the methodology used to estimate them? |
| Climate Narrative | Does the company describe its responsibility to tackle the climate crisis with accuracy and clarity? |
| Climate Coherence | To what extent are the company's actions, internal processes, and culture coherent with its narrative? |
| Climate Adaptability | To what extent is the company adaptable to the low carbon transition over the next 10 years? |
| Wider Impact | To what extent does the company take responsibility for and manage its impact on people and the wider environment? |

Table 2 – Table displaying the 8 different assessment areas used to guide the assessment process and the assessment questions that help to define and explain the focus of each area.

Indicators

The assessment areas ultimately assisted in shaping the scope of the framework, defining research questions that could be used at a high level to collect, analyse and assess data against a set of criteria. They also directed the assessment to a point where the researcher's subjective judgement was still required but constrained enough to offer repeatable and intelligible results. However, although these questions were helpful on their own, they did not provide a completely structured way for assessing companies and a more granular structure was needed to capture greater detail on how companies were responding to ESG issues. It was clear that several assessment areas required indicators of how a company could either perform poorly or well on that assessment. For example, in the assessment of a company's pledge to decarbonise, an assessment of the scope of emissions the pledge covers, as well as the strategy the company is using to achieve its pledge, is needed to understand if it will achieve genuine emissions reductions (Fankhauser *et al.*, 2021). Hence the scope and strategy of the pledge are indicators of its overall ability to achieve emissions reductions, which is the focus of the carbon pledges assessment. Assessment categories with more complex assessment questions were therefore assigned indicators where it was expected that more detail would be needed to complete a full assessment. Moreover, these indicators further guided the opinions and judgements of the researcher, providing more limitations to the potential for subjectivity to impact the assessment output. However, without these indicators, the research questions are potentially too open to a variety of understandings and responses from the researcher. By further developing the structured process of the assessment areas through indicators, it is expected that the framework's conclusions will be easier for stakeholders to understand and compare results. Table 3 outlines each of these indicators for the relevant assessment areas. These indicators are further summarised in figure 4, which visualises the structure of the framework's overall scope of assessment.

| Assessment Area | Indicators | Indicator question |
|----------------------|-------------------|--|
| Carbon Pledges | Scope | Does the company's carbon pledge cover the full scope of its emissions? This includes operational emissions (scope 1 and 2) and upstream emissions (scope 3 upstream). |
| | Ambition | To what extent is the company's carbon pledge ambitious enough to meet global climate goals? |
| | Strategy | Does the company have a clear and measurable strategy to achieve its pledge? |
| Carbon Accounting | Scope | Does the company's carbon accounting cover the full scope of its emissions? This includes operational emissions (scope 1 and 2) and upstream emissions (scope 3 upstream). |
| | Methodology | Is the methodology used to estimate the company's emissions robust and appropriate for the scale of its emissions? |
| | Transparency | Does the company report its emissions accessibly and in enough detail to be understood by someone with limited experience of emissions reporting? |
| Climate Narrative | Messaging | To what extent does the company send a strong public message on the climate crisis? |
| | Acknowledgement | To what extent does the company acknowledge the climate crisis publicly? |
| | Engagement | To what extent does the company engage with its stakeholders to boost climate action? |
| Wider Impact | Environment | To what extent does the company take responsibility for, and manage its impact on, the wider environment (biodiversity, water usage, pollution)? |
| | Society | To what extent does the company take responsibility for, and manage its impact on, society, its employees, and the local communities near its operations? |
| Climate Adaptability | Foresight | How well-prepared is the company for the implications of low carbon transition on its business? |
| | Responsiveness | How does the company respond to issues facing its business? |
| | Asset Constraints | To what extent are the company's assets locked into a high or low carbon future? |

Table 3 – The table displays the 5 different assessment areas established in the preliminary version of the framework where different indicators were used to assess overall ESG performance.

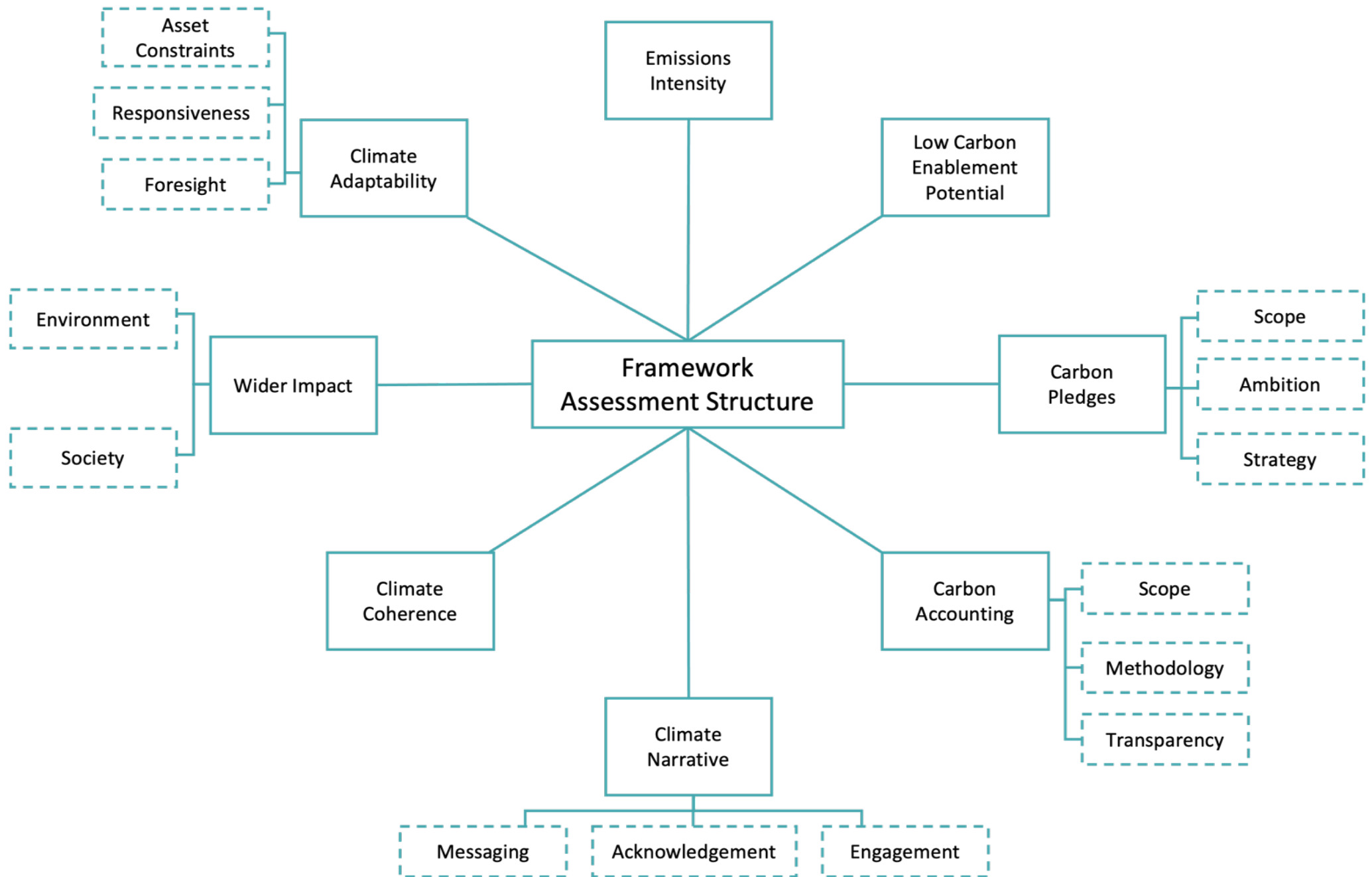


Figure 4 – The diagram shows the structure of the overall scope of the assessment used in the preliminary version of the framework. Each of the 8 assessment areas are shown connected to the main framework assessment structure, with the Carbon Pledges, Carbon Accounting, Climate Narrative, Wider Impact and Climate Adaptability indicators also shown.

Criteria of Assessment

To continue the further refinement of the structure of the assessment, specific criteria for how a company could score against the framework's assessment were developed. These criteria represented further limitations on the subjectivity that the researcher's inputs could have over how a company scored. However, without a clear set of criteria, it would be challenging to repeat the assessment for multiple companies without significant deviation in the overall results, which would make the outputs difficult for stakeholders to understand. Each assessment is divided into 5 different possible rankings a company could have, as displayed in Figure 5, with the criteria for how a company might achieve that ranking outlined below. The indicator assessments follow the same structure as the high-level assessment areas but the contribution of the indicator to the overall assessment ranking is weighted differently for each area, to reflect the priority of some indicators over others. This weighting process is again, inherently subjective, as further highlighted by (Berg, *et al.*, 2019), who explored how different weighting of criteria contributed to ESG rating divergence. Weighting was determined subjectively by the user of the framework and based on extensive research into the company and ESG issues. These weightings were never expressed quantitatively but were emphasized in the final assessment output as to whether an individual indicator was a priority for Client 1 to act on.

Figure 5 displays how each set of criteria works like a stairway, in that a company cannot achieve criteria 5 without having achieved all the other 4 criteria, although it is possible for companies to be positioned between different criteria. During the preliminary stages of the framework the criteria were informed by three main sources. Firstly, SWC's experience of working with a range of companies, each with varied impacts on people and planet, was central to understanding what exemplary vs poor performance on each assessment might look like. Secondly, Client 1's experience of engaging with its holdings on climate and environmental issues helped determine what companies should and shouldn't be rewarded for within the assessment, which is reflected in the criteria. Both SWC and Client 1's input was valuable to the creation of criteria for the more experimental assessment areas, such as Climate Narrative and Low Carbon Enablement, as there was little evidence to suggest other public frameworks were carrying out these kinds of assessments. The specific criteria used for the 8 assessment areas are outlined in Appendix A, in order to maintain the focus of the thesis on understanding the subjectivity in the development and use of the framework. Figure 5 represents an example of the structure of the criteria.⁴¹

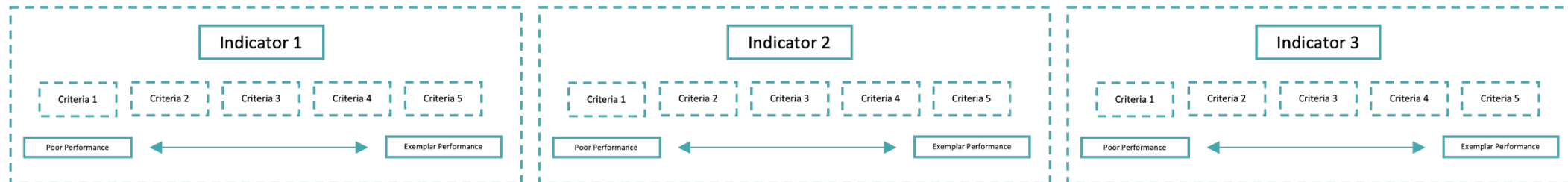
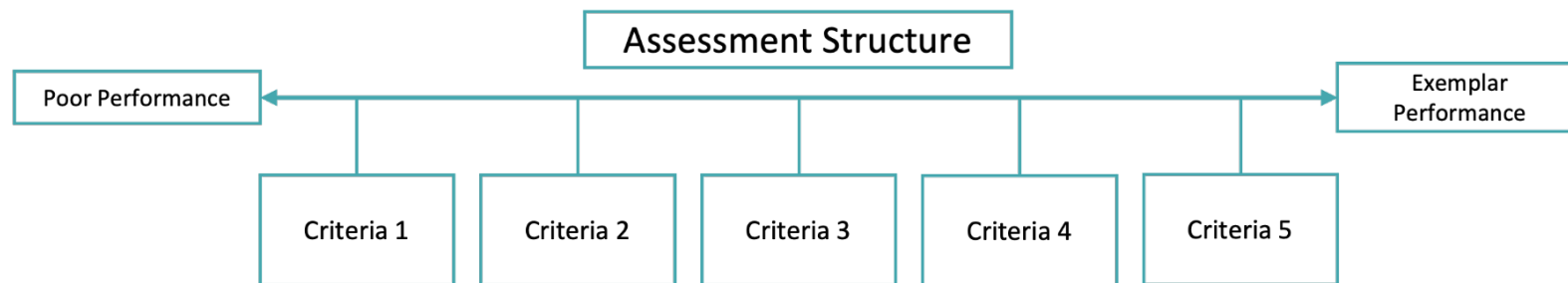


Figure 5 – The structure of each individual assessment area, as defined in Table 2. For each assessment area there are 5 levels of criteria for assessment, varying from Criteria 1, which is the poorest performance, to Criteria 5, which is the most exemplary performance. For some assessment areas there are indicators that contribute to the main assessment area structure. These indicators follow the same structure as the high-level assessment area.

Designing the Final Output

Key to the framework's utility is an output that displays both how a company has ranked across all 8 of the assessment areas, and which of these assessment areas are the greatest priority for the company to improve on. The aim of the framework output was to avoid aggregating each assessment for an overall 'score' for the company. There are two reasons for this aim. Firstly, the literature review, and the experiences of SWC and Client 1, display that it is harder to extract the detail of a company's impact if its overall ESG score is quantified as a single number, as the score only displays the overall output, without any expression of the other assessment areas. This leads those who wish to use the framework's output to potentially ignore the detail of the assessment, which is often the most crucial part of understanding a company's ESG impact (Simpson *et al.*, 2021). Secondly, quantifying the assessment gives an impression of objectivity when the assessment is inherently subjective across all assessment areas (Kennedy and Hill, 2018). Those using the framework should be fully aware that its construction and usage both feature significant input from the views of SWC, Client 1 and the researcher and that the outputs of the framework reflect their experience understanding ESG issues. Hence the output needed to have some indication of the subjective steps that went into ranking companies against a set of pre-determined criteria.

Figure 6 displays the first model version of the framework's output. The output takes the form of a spider diagram of the company's performance across all 8 assessment areas, meaning it is challenging to view only one area of the assessment without considering the others. Each of the assessment criteria are defined by the rings around the centre of the diagram, with companies that score poorly having an overall score that is positioned closer to the centre and those performing better having a score that follows the edge of the diagram. The output also reflects the priority areas the company needs to address, highlighting the segment of the spider diagram and the assessment label in blue. For each company, a maximum of 4 priority areas were shown in order to reflect clear prioritisation. Priority areas were identified based on the views and expertise of SWC and were established prior to carrying out the full assessment of the company.

The diagram can also be used to compare more than one company, by plotting the position of different companies on the same graph, although this often became complicated to view with more than 3 companies on one graph. Importantly, a decision was made to avoid presenting the diagram without clear explanation of why a company scored on each area. In order for the framework to be effective in helping investors and SWC's clients in understanding why they had scored a certain way, each of the output diagrams was partnered with a short summary of the evidence base for ranking a company. Therefore, the final output of each assessment was a 4-page document, covering the assessment of each area and with an overall summary of the company's ranking on the framework.

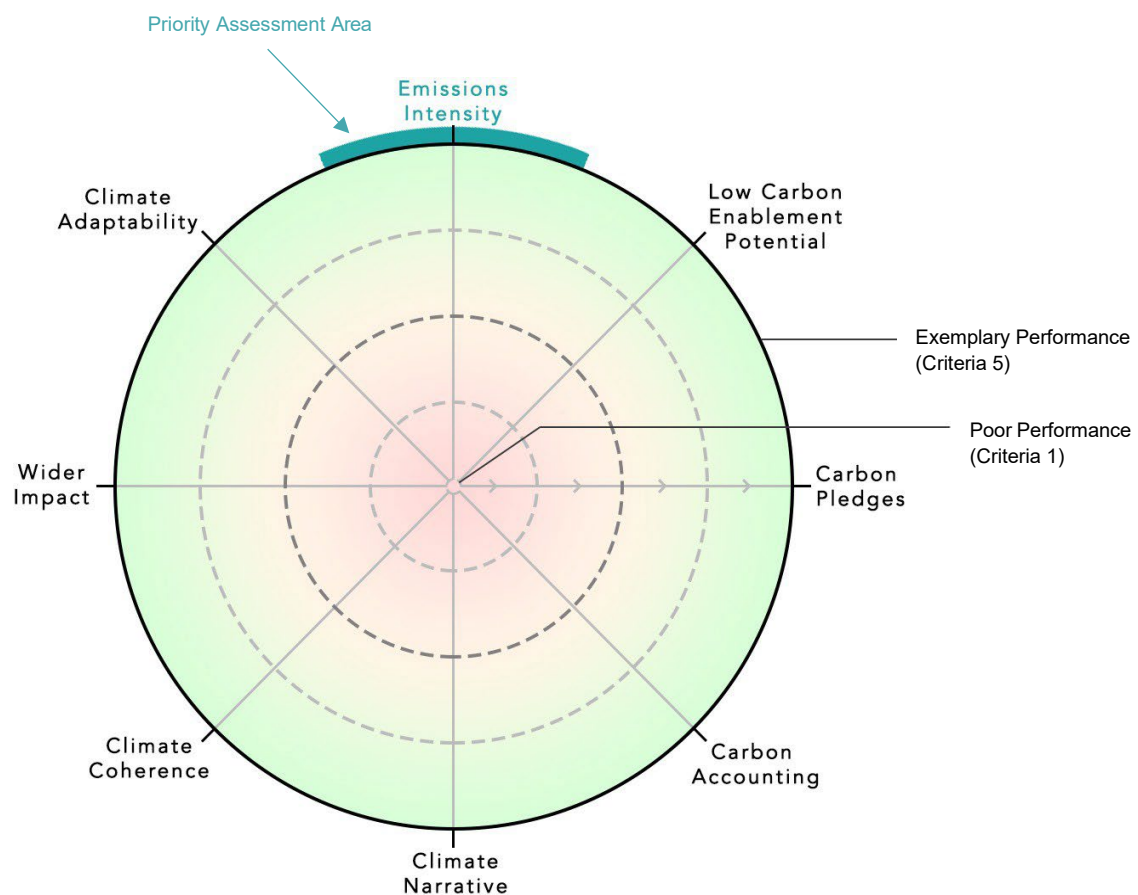


Figure 6 The spider diagram of showing the overall assessment of companies across the 8 different assessment areas. The diagram is formulated like a spider diagram, with company performance being reflected by a continuous line around the different assessment area lines. Companies that perform well appear on the outside of the spider diagram and companies that perform poorly appear towards the centre of the spider diagram.

Testing the Preliminary Framework

The framework was tested on 8 different companies that Client 1 invests in. Details on each company are provided in Table 4 but their names have been redacted for confidentiality reasons. These companies were deliberately chosen by Client 1 as they were held by a range of different funds within Client 1's portfolio and therefore the assessment would have the greatest utility to Client 1's operations. A wide variety of companies were chosen to test the framework's ability to assess companies from a range of industries. The majority of companies are based in the US, which was not a conscious choice but is somewhat reflective of Client 1's focus. They also varied in value and size significantly, with the market capitalisation of the companies ranging from 80 to 1700 billion USD. An example of a detailed company assessment has been provided in Appendix B but company names and details have also been redacted.

| Company Name | Country | Industry | Market Cap 2020 (~\$bn) |
|---------------------|----------------|---------------------------------------|--------------------------------|
| Company A | China | E-Commerce/Technology Conglomerate | 600 |
| Company B | United States | Technology Conglomerate | 1100 |
| Company C | United States | E-Commerce/Technology Conglomerate | 1700 |
| Company D | United States | Social Media Platform | 700 |
| Company E | France | Luxury Fashion House | 80 |
| Company F | United States | Video Streaming Platform | 200 |
| Company G | China | Technology Conglomerate | 700 |
| Company H | United States | Electric Vehicle Manufacturer | 100 |

Table 3 - Table displaying the different companies used to test the preliminary version of the framework.

Each company was assessed individually with each assessment taking around 3-4 weeks and followed the process outlined in Figure 7. Of each of the assessment stages in Figure 7, the data collection stage took the longest, especially for the largest companies, given the volume of information each of these companies reports. Equally, some companies reported very little information at all, particularly Companies A and G, which are both based in China. The main

sources of information from all companies were sustainability reports, dedicated sustainability websites and annual reports. Additionally, the amount of public information external to the company's own reporting varied significantly. Company D had recently been caught up in several public governance issues and this therefore dominated media coverage. Other companies had very little media coverage relating to their ESG performance, notably companies F, A and G. To ensure data collection remained consistent across companies, a data collection spreadsheet was developed. This greatly improved the efficiency of the data collection process and worked to cover the full range of all 8 assessment areas. As testing continued, this data collection sheet developed and allowed for more information to be included across the assessments. A key development was the inclusion of a non-sustainability-focused data collection process, aimed at understanding the company's business and the industry it operates in. This greatly benefitted the overall assessment, as often the researcher had little experience with the companies, and more was needed about their practices, financial performance, and history. Moreover, this highlights the importance of the researcher's knowledge base in the assessment of companies, as this experience determined their ability to pass subjective judgement of where each company should sit against the criteria.

The process of data analysis involved organising the collected data on companies into a short summary that could be reviewed by SWC and Client 1. Each summary was further peer reviewed, and the evidence used to support the positioning of each company against the 8 assessment criteria was analysed by at least 3 SWC employees before presentation. This was to ensure that the results were not skewed by a particular bias within an individual, whilst also maintaining the subjectivity of the assessment process. This process was carried out for all 8 assessment areas for confirming the overall score for each one, which was again reviewed by SWC employees before presentation to clients. Summaries were structured using the standard template outlined in Appendix A and the wording for each company was constructed manually by the researcher.

Following data collection, the output preparation stage consumed a significant amount of time, as it was often challenging to condense large data sets down into short summaries on each company. The preliminary version of the framework presented information in a Word document format, with each assessment area outlined in a short summary, with the criteria scale displayed above. Presentation to Client 1 in the preliminary version involved a brief run-

through of the methodology used to assess the 8 companies they provided, and then an extended period for Client 1 to review the findings. Client 1 then provided feedback on the overall assessment process, the outputs of the assessment and how the methodology could be improved.

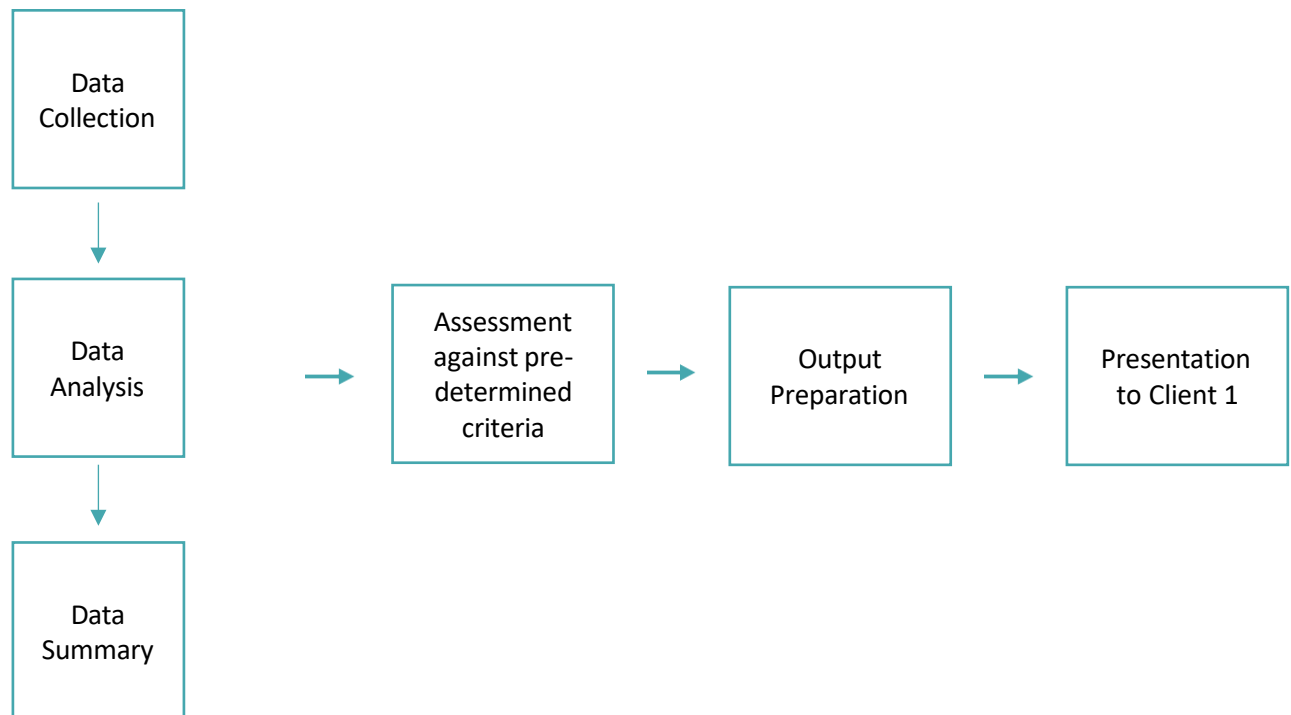


Figure 7- Diagram displaying the stages of the framework's assessment and the steps taken for individual company assessed.

Results from Preliminary Testing

Company Scoring Trends

Figure 8 shows the final output of each of the assessments carried out for the companies specified in table 3. On the whole, all 8 companies had varied final scores, reflecting the complexity between how each company manages its ESG impacts. Companies in the US tended to perform better than companies in China, largely due to a lack of reported data from Chinese companies. Company A provides a clear example of this issue, as it provided very

little information on its efforts to tackle the climate crisis and had no emissions estimates or carbon pledge, which immediately warranted the lowest ranking in both areas. In contrast, company E received the highest overall score, with only the Low Carbon Enablement section affecting the overall performance.

No area provided consistently good or bad performance across all 8 companies, although 6 out of 8 of the companies scored above or on criteria 3 (the halfway point) for the low carbon enablement section. The carbon pledges assessment had the greatest number of companies scoring below criteria 3, with 4 companies having no carbon pledge at all. Only 4 companies scored above criteria 3 for the wider impact assessment, with company C receiving the lowest score out of all 8. All but company A scored above criteria 3 for the climate adaptability assessment although company H had the highest emissions intensity. Equally, the priority areas for each company were mixed. Carbon accounting was only deemed a priority for company A, as it had yet to publish its emissions, whereas climate narrative was identified as a priority for all other companies. Moreover, the wider impact assessment area was identified as a priority for 6 out of 8 companies, with company H and F having priorities identified elsewhere. Thus the overall results from all 8 companies were varied and showed no obvious trends in companies' assessment. This is largely to do with the large variance between the companies' industries, products, operations, supply chains and overall approaches to ESG issues. The diagrams therefore demonstrate their ability to present this complexity clearly and in a way that is easy to understand. However, they do not offer a way of fully understanding a company's ESG impacts on their own, and significant explanation is needed to understand why and how the assessment process drew conclusions on each company. This explanation can be found in an example version of the final output given to client 1 in Appendix B.

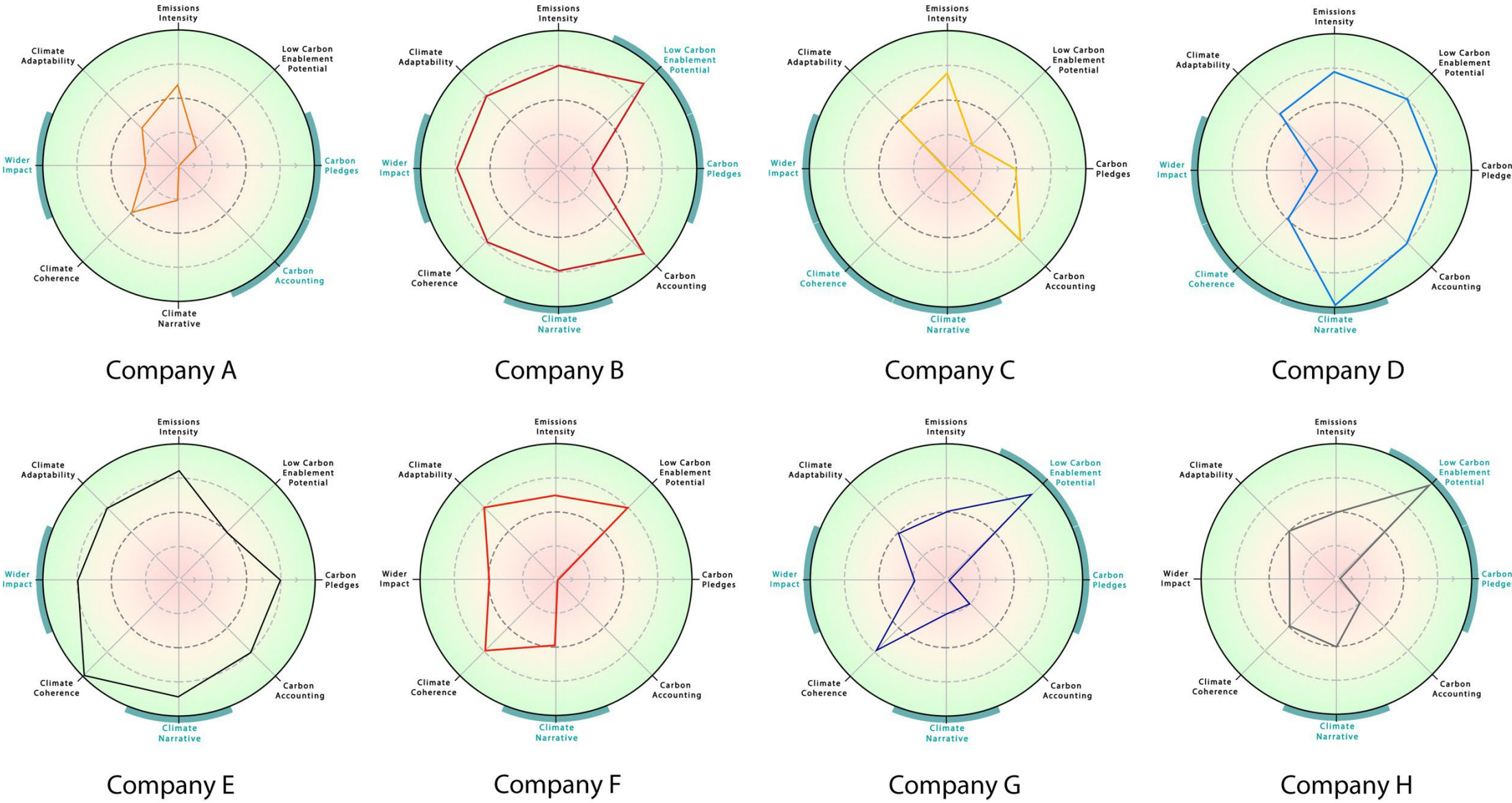


Figure 8. The outputs of each of the 8 companies assessed during the testing phase of the preliminary framework. The company names have been removed for confidentiality reasons. The different colours for each company were implemented to distinguish between them clearly, but also have significance that would undermine the confidentiality of the companies.

Data Availability and Reliability

Access to information about each company had a significant impact on the results of the assessment. Primarily, some companies had reported very little about their emissions and their ESG impacts in general. Company A and F for example, had no estimate of their emissions. This was not an issue for the effectiveness of the overall assessment, as the Carbon Accounting criteria reflected poorly on companies not reporting any emissions and companies with poor disclosure in general. However, data availability became a problem for other assessment areas, particularly the Climate Coherence assessment. Companies that said nothing on climate issues, but then also did nothing, were effectively providing a coherent response and therefore scored well. Company F provides an example of this (Figure 8). Companies not managing their climate impacts were therefore rewarded for doing so, so long as they also didn't publicly describe their response to the climate crisis.

Data availability also weighed heavily on the overall conclusions for the climate narrative assessment area, as a company's narrative could only be understood from what it had put into the public domain. This demonstrated itself as an issue through the assessment of Company C, who scored poorly on this area. Evidence supporting this poor ranking focused on the emptiness of Company C's climate narrative, in that they made big statements on climate without specific detail about how the company was taking any action as a result of these statements. However, upon presenting these results to Client 1, it became clear they had a different view on Company C's climate narrative and provided supporting evidence to suggest the company had taken serious action to reduce its climate impact, it just wasn't in the public domain yet. Similar issues arose when Company D, which originally scored the lowest out of all 8 companies on all 8 assessment areas, published new details on its ESG approach halfway through the assessment period. Hence the assessment of Company D had to be repeated to remain up to date. This was not an issue for Client 1, as they could compare the company's assessments before and after its new approach, but it did highlight the heavy dependence of the framework on publicly available data.

This dependence on public data was also demonstrated through the selection of sources of information excluded from the company's own reporting, which highlighted the subjectivity

of data selection. For example, to understand a company's Climate Coherence, data from external sources to the company's own reporting gave a clearer indication of the extent to which their actions matched up to their words. Company C had publicly stated its intentions to use entirely renewable electricity by 2025, but an independent report examined this target in more detail, finding that Company C had already committed to use fossil fuels to power several of its operations beyond 2025. Without this independent report, the ranking of Company C would likely have been different. However, the reliance on this report is also dependant on the researcher's judgement of what can be considered reliable information to evidence the assessment process. The researcher's selection and access to data ultimately impacts the outcome of the assessment, demonstrating the clear subjective input that is inherent to any assessment of ESG impact.

Data selection and the judgement of the researcher was also paramount to the Low Carbon Enablement Potential (LCEP) assessment. Company H played a systemic role in the shift away from fossil fuel vehicles and has also invested in providing user-friendly renewable energy solutions for homes and businesses alike. Thus, the company has significant potential to continue reducing emissions for its customers, warranting its high score in LCEP. However, this conclusion is based heavily on the subjective judgement of the researcher, given the uncertainty around possible decarbonisation pathways and the emergence of new technology. To deal with this uncertainty, the conclusion is supported by evidence from the researcher on why the company was responsible for a shift away from fossil fuel vehicles. However, the researcher selectively needs to find evidence to back up the scoring, demonstrating the importance of the researcher's judgement in understanding which sources can be relied upon. Different researchers will likely reach different conclusions on the reliability of sources applicable to evidence the assessment, thus begging the question of the extent to which the conclusions of the framework are dependent on individual researcher.

Controlling Biases

Given the inherent human element of the assessment process, efforts were made to control biases across the assessment of all 8 companies. However, this was challenging given the open subjectivity of the assessment. The developed structure of the framework's assessment helped to reduce the potential for researchers to completely inject their opinion into the assessment, as each of the assessment questions and indicators required evidenced responses. Despite this, it is likely that biases still had an impact on individual company assessments. All of the researchers involved are passionate environmentalists and therefore expressed frustration at several companies who scored poorly on climate and environmental assessment areas. Hence these companies were potentially scored unfairly in order to reflect the researcher's frustration. Efforts were made to reduce these biases through group discussion and peer review, although the extent to which there was an overall group bias was challenging to explore due to the significant stakeholder role SWC played in the overall development of the framework. In presenting to Client 1, some of these biases became apparent. For example, Company H scored poorly on most of the assessment areas, aside from LCEP. This scoring was unfair, as the evidence base for scoring the company poorly was limited and more reliant on the subjective view of the researcher. This example demonstrates the importance of evidencing each of the conclusions reached in the assessment of each company. However, evidencing these conclusions is only possible with complete transparency of the assessment process, which is not the case with the majority of ESG ratings, as highlighted by the literature review.

Biases also existed for specific companies and industries within different assessment areas, linking back to the issue with using only publicly available data. For example, companies that had good disclosure, strong reporting and regular sustainability reports often scored significantly better than those that didn't. This is potentially not an issue, as it could be argued that companies with bad disclosure should score poorly. However, this bias benefitted larger companies with greater resource to carry out regular reporting, damaging the score of smaller companies, or companies that do not have the resource to report a significant amount of data. Similarly, the Emissions Intensity assessment inherently benefitted companies with operations that were not emissions intensive. For example, Company D has a low emissions

intensity as its operational and upstream footprint only incorporates the emissions from its offices and the stationery and other products it is supplied. In contrast, Company H manufactures vehicles, so its emissions are significantly greater than Company D's. The extent to which Company D should be marked down just for having an emissions-intensive business, when the products it makes are enabling emissions reductions (as displayed in its LCEP score in Figure 8), demonstrates the framework's bias towards low emissions intensity companies. However, it could be argued that the framework's output, that shows the scores for all the assessment areas, counters this potential bias as the company's emissions intensity can be compared to other assessments. In effect, the diagram provides a more holistic view of the company's overall ESG performance, allowing investors to compare how the company performs across a range of assessments, rather than just one.

There is also potential for bias within the assessment of multiple companies at once by the same researcher, as it is inherent to compare and contrast companies in order to score either one. For example, it became apparent that the score for Company B was reliant on comparisons with Company D, as they both operated in the same industry. Thus, having assessed company D first, that assessment became the standard for that industry within the researcher's own judgement. As a result, the assessment for Company B was likely altered by comparison with Company D. The extent to which this is an issue for the effectiveness of the framework is debatable. It leads the assessment of one company to rely on another and the measurement of companies against absolute criteria is therefore limited. Equally, the overall effectiveness of the assessment is then heavily affected by the different companies assessed, meaning it is only ever likely to represent results on a subset of ESG issues which affect these companies, rather than ESG issues that should be a priority for reaching global climate and environmental goals.

Overlap and Dependency Between Assessment Areas

Testing also highlighted a potential overlap between several assessment areas, in that they were assessing the same ESG issues. Moreover, some of these assessment areas were also dependant on each other, so conclusions on one area of assessment could only be drawn following the completion of another. This was most common between Climate Narrative and Climate Coherence, as understanding if a company's narrative was coherent with its actions

also relied on an assessment of its narrative. Other areas overlapped with almost all the assessment areas. For example, the Emissions Intensity assessment added weight to the other areas as it helped to understand whether the company was responsible for a significant portion of global emissions. Company C has a high emissions intensity and a high absolute emissions level, thus the expectation on that company to have a strong Climate Narrative was greater than other companies. Furthermore, the Emissions Intensity assessment allowed for a reliability test of the company's carbon accounting, as SWC's emissions estimate was compared to the company's. Hence both the Climate Narrative and Carbon Accounting assessments were reliant on the Emissions Intensity assessment. The extent to which this undermined the effectiveness and reliability of the framework was questioned, as a lack of independence between assessments could lead to greater subjective input between the assessment of each company. For example, if the researcher relies on conclusions from one assessment to develop another, the extent to which their conclusions are dependent on evidence from the company is depleted. However, upon presentation to Client 1, it became apparent that this was less of an issue. They found the collective output of the framework of greater utility than the individual areas so the overall diagram of all 8 assessment areas was the main benefit of continuing its use. It did not matter if each assessment on its own offered independent conclusions, as the combination of the conclusions from all areas was the most helpful insight for Client 1.

Dependency on the Researcher

During the testing of all 8 companies, it became clear that many if not all the conclusions reached on each company were dependent on the subjective judgement of the researcher. Despite the structuring of the framework, the ranking of each company against the set criteria came down to a judgement from the researcher, having reviewed the evidence on the company's ESG performance. Of course, this judgement was supported by peer review and input from SWC's director, who also reviewed the findings of the researcher's assessment prior to presentation to Client 1. However, ultimately the researcher's experience and subjective judgement determined how the company scored against all 8 areas of the ESG assessment. This has serious implications for the scalability and utility of the framework, as if the conclusions drawn on each company are dependent on individual researchers, then they

are unlikely to be repeatable and comparable. Moreover, the output of the framework is also dependent on the researcher's ability to explain and justify why a company has been scored the way it has. This became clearer upon presentation to Client 1, as Client 1 had varied responses to some of the preliminary framework results. For example, Client 1 argued that the wider impact assessments not only covered too much information in one area but were also too heavily reliant on the researcher's own opinions. Evidence for this argument stemmed from the lack of expertise of the researcher and SWC had on these issues, especially in comparison to the climate-focused assessment areas. Client 1's concerns also raise an important point, in that the conclusions of the framework are also dependent on the credibility of the researcher on ESG issues. This is the same for ESG ratings agencies as highlighted by the literature review. Subsequently, the results of the framework testing were both dependent on the researcher's subjective judgement and the perceived credibility of that judgement.

The credibility of the assessments was also determined by the depth and breadth of the research carried out. Several of the assessment outputs in Figure 8 are supported by weeks of research into companies' ESG issues, and a combined effort of a small team of researchers. Appendix B shows a summary example of the level of detail provided on each company. This highlights the importance of carrying out significant research in order to fully understand the ESG impacts of a company. The literature review highlighted that ESG raters often struggle to spend such time and resource on in-depth assessments, opting for a breadth of companies rather than a depth of research. This raises another important point, namely that the current research process of the framework, and its dependence on long and in-depth research periods, makes it a hard tool to use at scale.

Following the Framework Principles

Several challenges arose around ensuring the framework remained within the 7 principles outlined at the start of the development process, with some being harder to manage than others.

1. Companies should be assessed using only publicly available data

Principle 1 remained largely unchanged, although given the lack of disclosure from companies it was suggested that the assessments could draw on confidential data provided by Client 1. Although this would likely have benefited the utility for Client 1, it would not have ensured the transferability of the framework around other industries and a decision was made to avoid changing this principle.

2. Polar assessment questions should be avoided or only included to benefit data collection

Principle 2 also remained largely unchanged, but in some cases binary questions were useful for data collection purposes, as they aided the quick assessment of whether a company did something or not, and if further data collection was needed.

3. Assessment indicators should be evidence-based

Principle 3 remained a priority to the assessment process and in some assessment areas, such as climate narrative, there was a greater desire to increase the evidence-based focus of the assessment within the second stage of the framework's development. As highlighted in the exploration of biases, some further testing was needed to ensure that the researcher using the framework could not draw conclusions without sufficient evidence.

4. The outputs of the assessment should be of value to Small World Consulting and financial services providers

Principle 4 had clearly been demonstrated to be followed through the testing of the preliminary version of the framework. SWC and Client 1 both benefitted from the testing period, with SWC using the tool to support Client 1's ESG objectives. This involved advising on suggestions for engagement with the companies that performed poorly, as well as helping Client 1 to better understand the ESG issues its holdings faced. The extent to which the framework will have value for other financial services providers is yet to be tested, but remains paramount to ensuring the framework's utility.

5. The framework should build on already existing frameworks as far as possible, without compromising on other principles

Principle 5 has been covered well by the framework testing period, as the methodology clearly pinpoints links to other assessment areas and often information from other assessment frameworks was used to assess companies during the testing phase. However, there are some areas where the language used to describe certain climate issues could be more clearly aligned with other assessments, particularly Low Carbon Enablement and Climate Adaptability. Particular attention was paid to the wording of each assessment area by Client 1, as ideally, each assessment headline should be understood easily in as few words as possible, to improve the accessibility of the framework.

6. The framework covers an assessment of every element SWC deems material to company ESG performance

This principle created issues for the framework's development, as SWC's views on the materiality of different issues changed frequently. As a result, it was challenging to prevent changes to the scope mid-assessment, as several topical events that took place during the time of assessment likely influenced the scope. It was also challenging to stick to the scope of issues deemed material when research into a company highlighted other issues that were not already within the scope. For example, Company C had made specific claims around its carbon offsetting scheme that could not be evidenced, but this wasn't properly covered off in the scope. Therefore, changes were made to include more detail on specific areas of assessment as more companies were assessed. Given the framework was still in development, changes to the scope mid-testing were not an issue, though it is expected that the final version will need a clearly defined scope in order to ensure comparability of assessments.

7. The framework should aim to focus on the impact companies have on society and the environment, and not entirely on whether changes to society and the environment impact companies.

Finally, principal 7 was achieved in 7 out of 8 of the assessment areas, with Climate Adaptability being the only area that focused on understanding how ESG issues would affect the company. Despite the original concerns that this area would distract from the company's actual ESG impacts, it became apparent that the majority of companies that manage their impacts well also understand how they will be affected by ESG issues. Hence, this principle was helpful in guiding the assessment process, but testing proved that it wasn't a necessary

focus for ensuring that the framework offered a meaningful assessment of company ESG performance.

Preliminary Conclusions and Changes

The preliminary testing of the framework demonstrated its clear utility to Client 1 and SWC, with both benefitting from the greater detail the assessment provided in comparison to other ESG frameworks and the ease of understanding the framework diagram. This afforded some proof of concept, that an openly subjective and transparent approach to assessing ESG performance is still of utility to investors and consultants alike. However, there were certain areas of the assessment process that required clarification and improvement. Client 1 specifically asked for greater transparency about how certain conclusions were reached and the confidence and credibility SWC and the researcher had on the final output. The subjective inputs of the researcher had been demonstrated to be of utility to the depth and detail of the framework's outputs, but also limited the scalability and reliability of the framework's findings.

Ultimately, the initial testing stage provided some indication that the core foundation of the framework, supported by its 7 principles, can provide both meaningful and useful assessments of listed equity companies. Further testing is needed in order to advance the assessment process in line with the suggestions made by Client 1 and the adaptations needed, highlighted by the findings. The framework would benefit from testing on a variety of companies as it is unlikely it will be able to capture the complexity of dealing with ESG issues across a range of industries immediately and without exposure to more industries.

The First Revision of the Framework

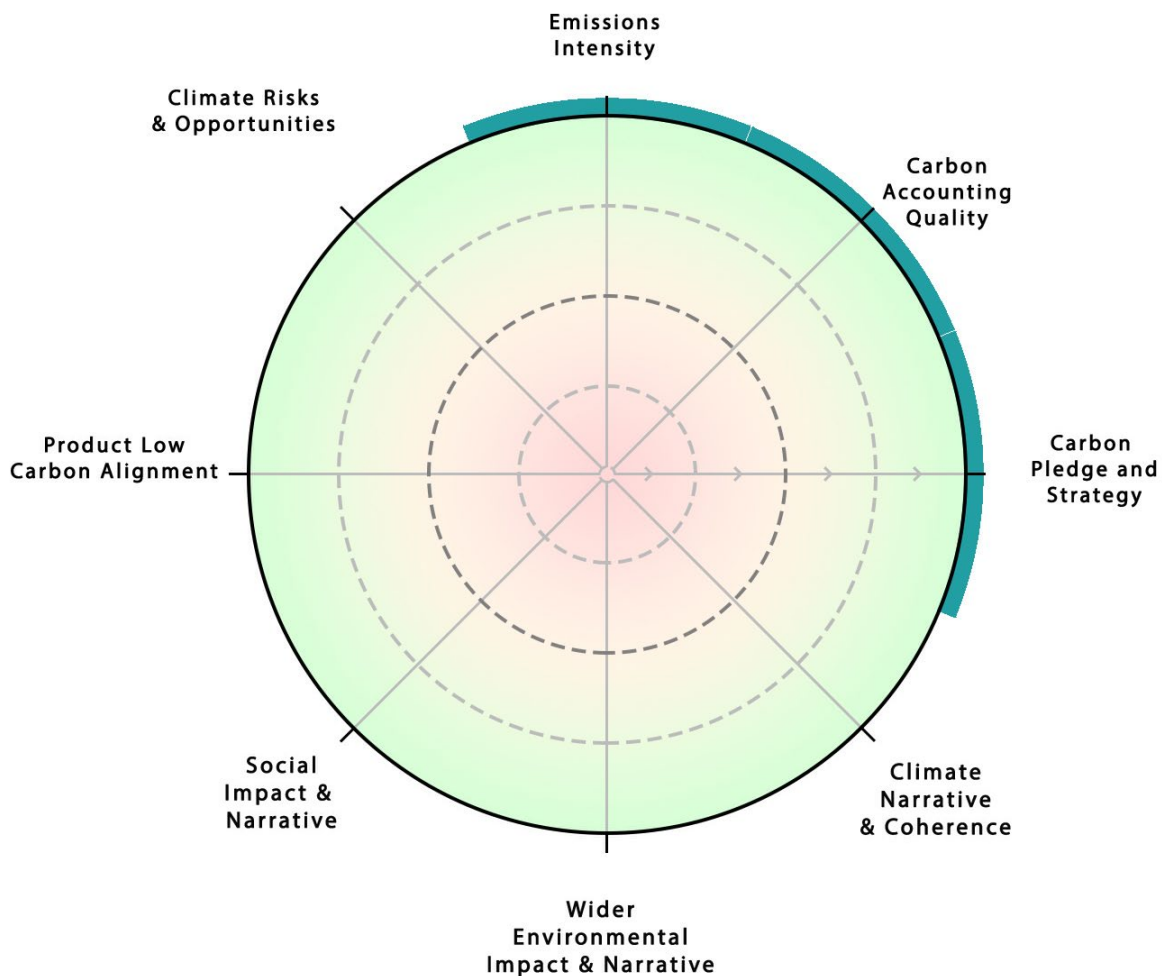


Figure 9. The first revision framework diagram used within the second stage of testing. Several of the assessment areas have been adapted following testing from the preliminary version (see text).

Prior to testing the first revision of the framework, several changes were made to the structure of the assessment, the criteria of assessment areas and the output diagram. Figure 9 shows the first revision of the output diagram. Changes were made to the wording of all the assessment areas, with only the emissions intensity area remaining the same. Following the feedback from Client 1 on the potentially confusing nature of the assessment area titles, the Carbon Accounting and Carbon Pledges sections were altered to 'carbon accounting quality' and 'carbon pledges and strategy' respectively. Following positive feedback from Client 1 and SWC the carbon accounting quality assessment has not changed in its structure or criteria at all, and the heading change is only to reflect that the assessment focuses on the quality of a company's carbon accounting, rather than whether the company has carried out carbon

accounting or not. Equally, no changes were made to the carbon pledges section other than the heading, as the inclusion of 'strategy' in the title emphasises that assessment does not just assess the pledge on its own.

More significant changes were made to Climate Narrative and Climate Coherence, as it was clear from preliminary testing that these assessments would benefit from being carried out congruently. Companies would be unable to be rewarded for having a poor climate narrative whilst also taking poor action to back up this narrative. Thus, in order to combine these areas, the coherence assessment structure was added as an indicator to the climate narrative section. No changes were made to the coherence criteria, as testing showed this criterion was already effective at assessing companies.

The wider impact area was also altered, after feedback from Client 1 emphasised that the assessment tried to cover too many ESG issues within one assessment area. As a result, the wider impact area was split into Wider Environment Impact and Narrative and Social Impact and Narrative. The criteria for this assessment remained the same but was split to emphasise the importance of these issues independently of each other. Equally, it was expected that greater resource could be allocated to these areas independently, which preliminary testing showed to improve the credibility of the assessment. These changes somewhat addressed Client 1's concern with the credibility of the assessment but extra changes were made to the overall framework process. Each assessment was now ranked in terms of the level of credibility and confidence the researcher and SWC had in the output of that assessment, as displayed in the example assessment output in Appendix D.

Further changes were made to the framework to improve the credibility of the assessment process, particularly to the Climate Adaptability and LCEP assessments. The outcomes from both assessments lacked credibility for two reasons. Primarily, they were heavily dependent on the subjective judgement of the researcher, as both are forward looking assessments that work on an understanding how the company might be both respond to and directly benefit from the low carbon transition. Given the uncertainty of how a company might respond to ESG issues, the climate adaptability assessment was altered to understand how the company was managing its ESG risks and opportunities currently, which could provide a stronger basis

for extrapolating how it might manage these risks and opportunities in the future. Hence the creation of the 'Management of Climate Risks and Opportunities' assessment, for which the criteria is outlined in Appendix D. Similarly, the LCEP assessment was alerted to focus less on understanding how the company's had potential to enable emissions and more on how its current products and services were aligned with a low carbon world. Some assumptions had to be made about what a low carbon world might look like, based on the expertise of SWC, and the assessment was focused on the company's products as this maintained the downstream focus of this assessment area. Thus the 'Product Low Carbon Alignment' assessment was developed, whose criteria is also displayed in Appendix C.

Feedback from the testing of the preliminary framework also emphasised the need to improve the ability of the final output diagram to reflect prioritisation across the 8 assessment areas. This involved a change to the concept of the priority assessment, as each individual assessment area would now be given a priority ranking for the company out of 100. This priority ranking would then determine the opacity of the blue highlights on the edge of each assessment area on the final diagram (see Figure 16). High opacity reflected greater priority than low opacity. It is expected that this would give a clearer indication of which areas the company needed to improve on, rather than only highlighting 3-4 areas that SWC inherently deemed a priority for the company.

Testing the First Revision

After adapting the framework based on the suggested changes made by Client 1 and the review of the preliminary testing period, the first revision of the framework was tested on 6 more listed equity companies held by Client 1. Table 4 displays the companies and the reference name given to each to ensure confidentiality, as well as the industry and country they operate in and their market capitalisation as a relative indication of size. In contrast to the companies tested in the preliminary assessment, these companies operated in a greater range of countries and a wider variety of industries. This was a deliberate choice from Client 1 in order to understand how the framework performed on a variety of companies, particularly those from more emissions-intensive industries such as manufacturing and

extraction. The results of testing the first revision on these companies are displayed in Figure 10. Each company was again assessed individually and each one took around 3 weeks to complete the assessment and present the findings to Client 1 (see Appendix C for an example assessment). 6 companies were chosen as these were the priority companies for Client 1 and given the extended period it took to assess the last 8 companies a decision was made to seek results from a shorter period of assessment.

| Company Name | Country | Industry | Market Cap 2020 (~\$bn) |
|---------------------|--------------------------|--|--------------------------------|
| Company I | United Kingdom/Australia | Mining of iron ore and other minerals | 90 |
| Company J | Sweden | Manufacture of construction hardware and tools | 60 |
| Company K | United Kingdom/Australia | Mining of iron ore, coal and other minerals | 160 |
| Company L | Taiwan | Semi-Conductor Manufacture | 480 |
| Company M | South Korea | Battery Manufacturer | 30 |
| Company N | India | Oil and gas refinery and telecommunications | 90 |

Table 4 - Table displaying the different companies used to test the first revision of the framework.

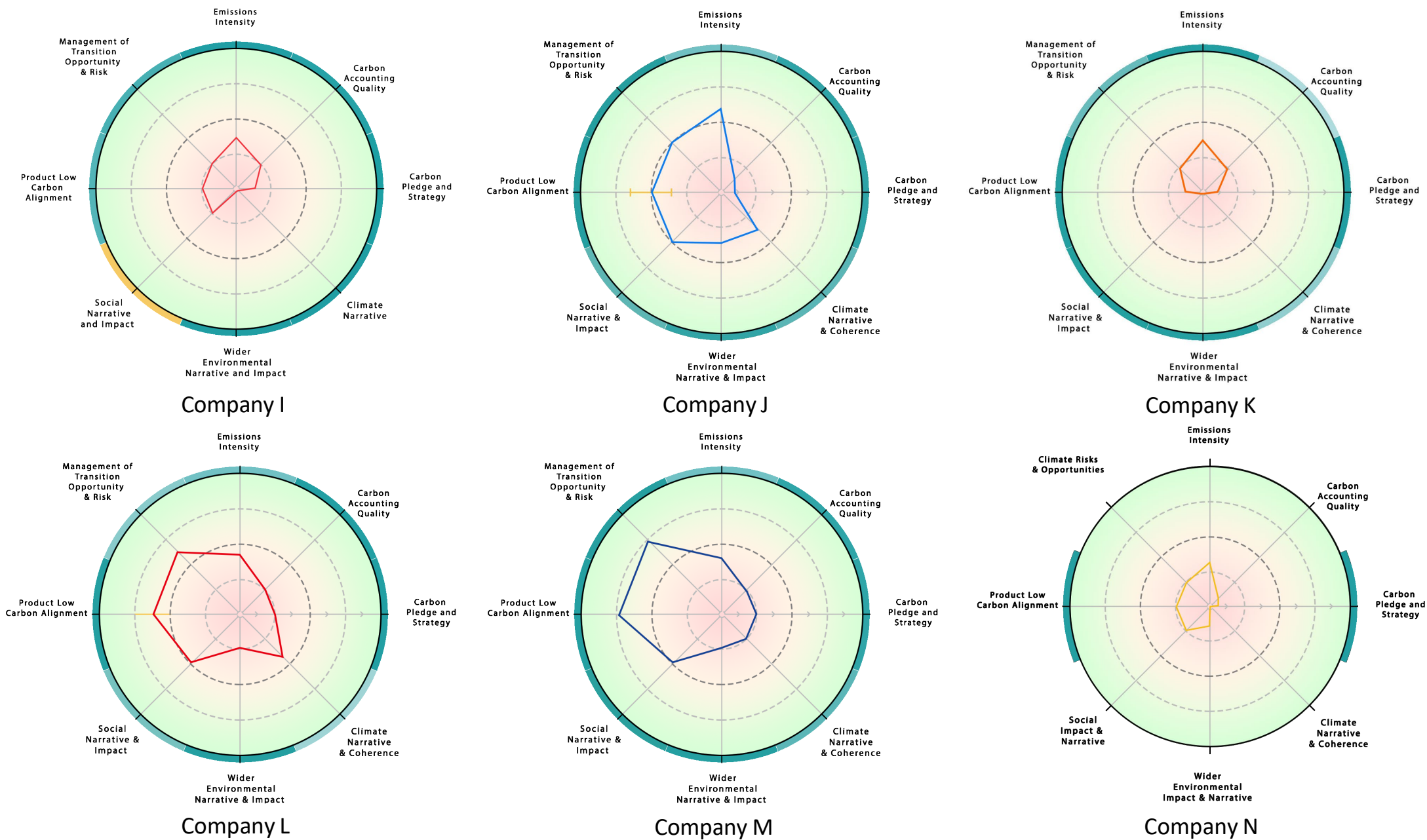


Figure 20 shows the outputs of each of the 8 companies assessed during the testing phase of the preliminary framework. The company names have been removed for confidentiality reasons but the labels for each company are placed below their respective diagram.

Results from Testing the First Revision

First Revision Company Scoring Trends

Companies I, K and N all scored particularly poorly, with these companies not reaching above criteria 2 across all the assessment areas. Company K performed the worst of all companies, including those in the preliminary test, closely followed by Company N and Company I. All of these companies operate in extractive carbon-intensive industries and the framework diagrams reflect this, as well as the companies' currently poor carbon management performance. Companies L, M and J performed comparatively better, although some uncertainty is reflected in the assessments of Company L and J on the product low carbon alignment assessment, suggested by the yellow lines on the scale for this assessment area in figure 10. This uncertainty stems from the unpredictability of the demand for these companies' products in the future, which ultimately varies the extent to which these products are aligned with low carbon transition. This is simpler for Company L, as it produces semi-conductors which are expected to increase in demand in line with greater consumption of technological goods. However, this raises the question of the extent to which greater consumption of these goods will aid global ambitions to curb the climate crisis, thus reflecting uncertainty in the products' alignment. In contrast, Company J received an uncertain Product Low Carbon Alignment score given the large range of products it sells. From compressors used by the oil and gas industry to portable battery packs that can be used on construction sites in place of generators, the overall product mix is varied in terms of its alignment with a low carbon future.

On the whole, there were again no obvious trends in the way these 6 companies scored. This begs the question about the utility of the framework for comparing and contrasting different companies, as it appears each assessment's independent focus on one company offers a unique ranking of their ESG performance. This could be because all companies are in fact unique in their approach to ESG issues, which seems unlikely given that many other ESG assessments effectively observe trends in their assessments (Peiró-Signes and Segarra-Oña, 2013). It is more likely that the subjectivity of the researcher is the dominant factor here,

potentially highlighting that the structure of the framework does not limit the researchers' subjective inputs enough to ensure a reasonably repeatable assessment process.

Comparisons with the Preliminary Results

The extent to which the preliminary results and final results can be compared is challenging, given the changes made between the two, the different companies assessed and the potential for changes in the judgement of the researcher. However, it is clear that the scoring for the companies in the first revision is collectively lower than the first 8 companies. There are several potential reasons for this. Primarily, the companies assessed in the first revision are from typically more energy and emissions intensive industries than those in the preliminary version. Additionally, these companies also manage their ESG impacts poorly. For example, Company I had no clear way of measuring its impact on biodiversity at its mining sites and had no policy on whether it would withdraw a mining operation from an area where its impact was having a significant effect on local species. Additionally, it reported no data on which species it was currently impacting, and published case studies based on very small regenerative projects that covered around 16% of its total land use footprint. As a result, company I was ranked the lowest possible rank on Wider Environmental Impact Assessment. Moreover, several of these companies were deliberately misleading about their role in tackling the climate crisis. Company K mines fossil fuels, particularly metallurgical coal. It describes metallurgical coal as a 'low carbon solution' on the basis that it will still be needed for steel manufacturing for many years to come, and society needs steel for the low carbon transition to build renewable energy infrastructure. Although the latter may be true, Company K greatly overstates the demand for steel from renewable energy technology and also discounts their responsibility to push for lower carbon steel smelting alternatives, rather than waiting for the industry to move itself. As a result, Company K received the lowest score for product low carbon alignment, as its products greatly increase global emissions and it had taken little action to reduce these emissions whilst showing no intention of doing so in the future. These examples demonstrate the clear reasoning for lower scoring of these companies using the framework, demonstrating its ability to provide evidenced based conclusions on a company's ESG impact.

Although there is evidence for the reasoning behind the lower scoring for these companies, the potential for biases to impact the results is still high. For example, some difficulty arose around ensuring that biases were removed from the assessment, particularly around Companies I and K, which are both well-known heavy emitters and have a history of being targeted by activists. Efforts to increase the weight on the peer review process aimed to reduce the potential for researcher's biases to impact the final result on these companies. Further review from Client 1 further reduced this impact, as they challenged potentially subjective views from researchers and pushed for a greater evidence base to score each company. However, the extent to which these biases can be fully removed from the assessment process, given its dependence on a subjective researcher, is questionable.

Effectiveness of Changes Between Preliminary Version and First Revision

The changes made between the preliminary and the first revision of the framework proved to be effective in increasing the utility of the framework's process and highlighting the subjective inputs from the researcher. The Product Low Carbon Alignment Assessment greatly improved upon the LCEP assessment in the preliminary version, as Client 1 found the assessment process more reliable and easier to understand. However, some difficulty in this assessment is highlighted by Company J and L, where Figure 10 shows a yellow line on that portion of the spider diagram. These lines are to reflect uncertainty in the assessment outcome, as it was often challenging to reach a strongly evidenced based conclusion. For company J, this was primarily down to the wide variety of products it sold, of which some were heavily aligned with transition and others were not. For example, Company J manufactures and sells on-site construction batteries which can be used to reduce dependence on fossil fuel for vehicles and tools. However, it also sells large scale compressors and specialist equipment for the oil and gas industry. Hence, some of its products are considered to be aligned, whilst others are not. Some 'netting' of these products was carried out to achieve an overall score, in that their impact was weighed against each other, but it was still deemed important to reflect the uncertainty in the result. Moreover, this 'netting' process is inherently a subjective judgement made by the researcher, based upon the

knowledge and evidence they have of the product, thus further demonstrating the importance of this judgement in the ESG assessment process.

The combination of the climate narrative and climate coherence sections provided a clearer insight into the extent to which companies could be trusted on their statements on climate. This was demonstrated by Companies I and K clearly, as both these companies focused on a narrative that positioned their business as benefitting from low carbon transition. However, both companies had clearly wedded themselves to high carbon futures, with Company I continuing to invest in extraction of low-grade iron ores that could only be used in high carbon blast furnaces and Company K showing no commitment to phase down its metallurgical coal assets. In contrast, Company N's narrative was marked down for being confusing and unclear. Company N described fossil fuel extraction as a low carbon activity and also invested in so called 'carbon neutral oil' which it claimed reduced its overall footprint. It also described certain fossil fuels as renewable and did not back up any of its emissions reduction claims. The reasoning for combining the two assessment areas into one was also tested by Company M, as its narrative and actions on climate were limited. In the preliminary version, this company would have scored well on coherence, but the combined assessment with its narrative ensured that the company was not rewarded for poor performance. The process of assessing a companies' narrative against its actions, as demonstrated in this assessment area, requires significant judgement from the researcher. The conclusions outlined on Company I, K, N and M all demonstrate how the company's narrative is weighed against its actions in order to give perspective on the extent to which the company is both talking the talk, and walking the walk, on its approach to climate issues. It is challenging to see how these conclusions could be reached without the input of a researcher, thus further demonstrating the dependency of the framework on human input.

In some cases, Client 1 made further suggestions that altered the final version of the framework during testing. The diagram for Company N is notably different to the other companies, as towards the end of the assessment it was decided that the priority scoring in the diagrams was more confusing than it had been in the preliminary version. It was challenging to understand which areas were actually a priority for the company, as the opacity of each segment didn't vary as significantly as expected, largely due to design issues. As a

result, Company N uses the original priority scoring used in the preliminary version. Additionally, the wording of 'Management Risks and Opportunities' is altered for Company N in order to include physical climate risks and opportunities. Hence the name changes to 'Climate Risks and Opportunities', to avoid a complete policy and economically-orientated focus. Despite this change, very few physical risks or opportunities were identified for Company N and further testing of this section is likely needed to confirm its utility.

Conclusions from Testing the First Revision

The changes between the preliminary version and the final version proved to be constructive at increasing the effectiveness and accessibility of the framework. The assessment area headings were simple to explain to investors working for Client 1 who had had no previous exposure to the framework's preliminary version. Moreover, the new method of presenting the findings of the assessment as a presentation, see Appendix B, improved the ability to communicate the complexity of assessing each company and the detail included within each assessment. The iterative process of developing the framework proved to be useful at building upon previous versions and developing a continuous method of improvement. The framework also remained flexible enough to be altered during the testing process, as demonstrated by the changes made to the diagram for Company N. However, this flexibility also potentially presented a weakness, as investors questioned the robustness of a framework in which the parameters were continually changing. Moreover, issues with the comparability between companies presented some confusion for investors. It is challenging to compare companies within the same industry, given that their activities within that industry vary significantly. For example, Companies I and K both operate in the mining industry, but the mix of minerals they mine is largely different and therefore the companies' ESG impacts are also varied. These issues are amplified when trying to compare companies across industries, as often the issues affecting one company are vastly different to another. For example, the main issues impacting Company K are the scale of its emissions and its impact on the environment, whereas Company J has comparatively low emissions and its main ESG issue is the extent to which its products can reduce emissions for its customers. Thus, drawing comparisons across companies, where the indicators are often company specific, is challenging. This could be resolved by normalising the assessment indicators so they do not account for company

variability, but this would likely reduce the ability of the framework to offer detailed insights on how a company is managing its ESG impacts.

The framework continued to feed into Client 1's overall approach to ESG issues and the first revision version is currently still being used to assess more companies within Client 1's portfolio. However, Client 1 expressed some concerns about the ability to continue to scale the framework, particularly given that it currently relied heavily on the expertise and experience of SWC. The extent to which the framework could be used by anyone with little environmental or climate-related experience is currently limited by the complexity of the assessment areas and the need to be able to understand emissions reporting and environmental disclosure. This remains an issue for the framework and potentially limits its uptake outside of an SWC client scenario. It is therefore clear that further testing of the framework is needed prior to a publicly available version being released.

Assessment for different SWC Clients

Following the full assessment of 14 companies for Client 1, SWC intended to explore the utility of the framework with other clients, in order to receive more feedback and increase the variety of companies the framework had been tested on. Additionally, the purpose of testing with other clients was to assess the extent to which the framework could be deployed without drawing on publicly available information. Often, many of SWC's clients do not have any published climate data and they come to SWC for advice on disclosing their impact publicly. Using the framework on these companies could highlight gaps within current sustainability strategies and advise companies on how they could improve. Hence these assessments required a more collaborative assessment process than the previous testing cycles, as the preliminary and final testing involved no communication with the company under assessment. As a result, these assessments would be built on confidential data, or information provided in discussions and meetings with the client. This dependence on new data sources presented an interesting test for the role of the researcher in the framework, as their ability to extract this data was paramount to the effectiveness of the framework. The extent to which this can be shared within the thesis is limited, but the results, limitations and conclusions of using the framework this way have been outlined for each client.

Client 2

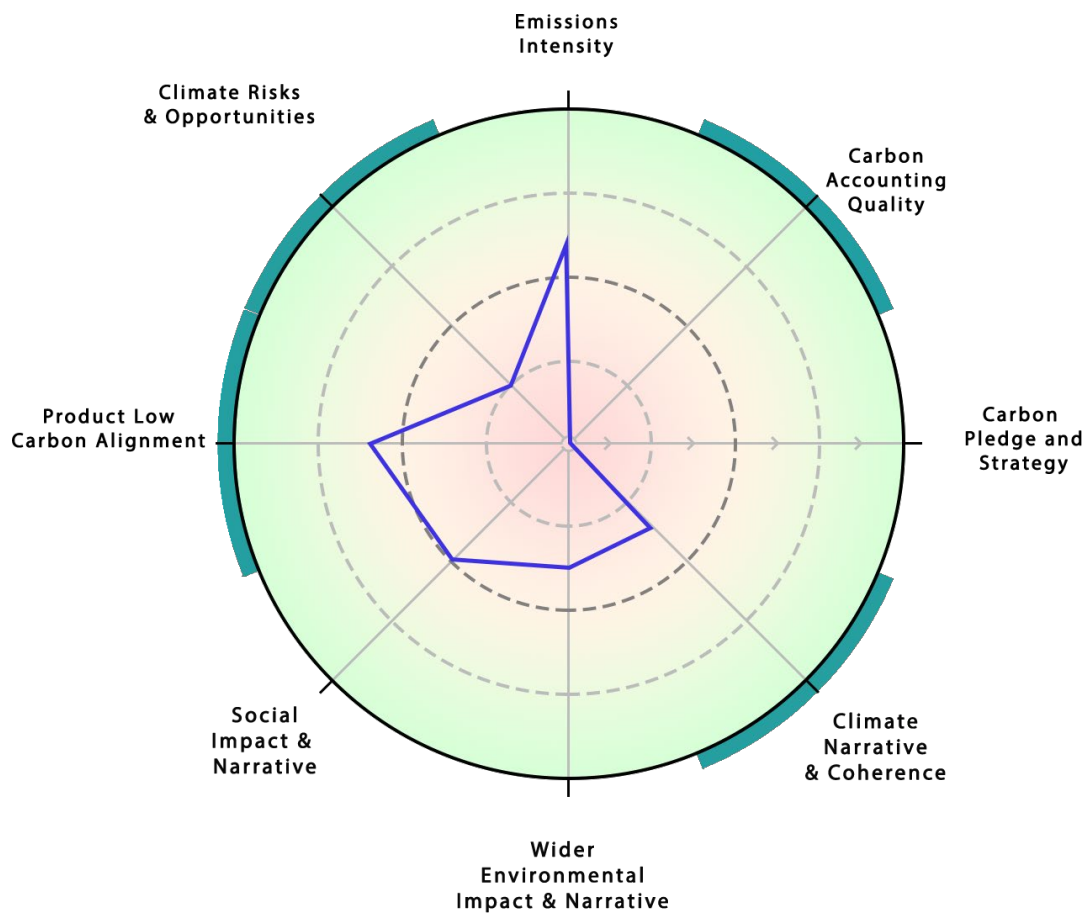


Figure 11. The framework output for the assessment of Client 2, using the first revision of the framework.

Figure 11 displays the final output of assessing Client 2, a UK-based manufacturing research centre. The assessment took place over several months and involved a visit to the client's operations, as well as regular meetings to understand how the company's current approach to sustainability could be assessed using the framework. Prior to contacting SWC, the client had focused largely on improving the efficiency of manufacturing processes, aiming to reduce costs for its customers through researching lower-cost materials or more energy efficient production lines. As a result, the sustainability of its research took a backseat on many of its projects and the client was largely unaware of the impact its research might have on the environment and society.

The assessment of the client confirmed this, as although the emissions intensity of the client was low, it had yet to estimate its carbon emissions, set a pledge to reduce its impact or

manage its wider environmental impacts. However, through the assessment it became clear that the real ESG impact the client could have was through the outputs of its research, as this research was often used by large multinational companies responsible for a significant portion of the world's global carbon footprint. Heavy weight was therefore placed on the 'Product Low Carbon Alignment' assessment, understanding the client's product to be its research. This assessment revealed that although the client was invested in some low carbon products, such as developing renewable energy technology or improving the fuel efficiency of aircraft, it was also invested in some carbon intensive projects. Although this initial assessment was helpful for the client at providing a high-level understanding of where it should prioritise its action, greater detail was needed to meaningfully guide Client 2's research towards a low carbon future. This initial assessment has therefore led to a second project focusing on this area with Client 2, thus displaying the utility of the framework to bring in more work for SWC.

Despite the benefits of using the framework with Client 2 being largely focused on the potential to reshape its research, the assessment made clear another use of the framework. Given Client 2's lack of experience with ESG issues, the process of collaboratively being guided through the framework assessment process represented a significant learning curve for Client 2's employees and management team. However, feedback from Client 2 emphasised the utility of the framework as an educational tool for businesses, given its accessibility and ease of use when working with SWC. Client 2's employees now have greater confidence in their understanding of ESG issues and this has driven the company to make sustainability its core focus, with regular blogs from the CEO on progress and a continued effort to improve the focus of its research. This demonstrates the varied utility of the framework, as although Client 2 had limited data that would have been traditionally used to assess the company, the framework still provided a useful way of supporting the company's goals to improve its approach to ESG issues. Moreover, it further emphasises the importance of the researcher in using the framework. The researcher's interaction with the client, regular meetings and discussion around ESG issues effectively built up the confidence the client had in the researcher's ability to use the framework to offer meaningful suggestions on how to improve their approach to ESG issues. The framework also acted as a knowledge exchange tool between the researcher and the client, as it could bridge the gap between the client's lacking

ESG experience and the knowledge of the researcher. However, this highlights the importance of the client’s trust in the researcher in the assessment process, and the dependency on the credibility of the researchers’ skills, as further emphasised by Client 1 in both the preliminary and first revision of the framework. Thus, raising the question of the extent to which the framework can be used outside of SWC’s consulting team and whether its effectiveness is dependent on individuals, rather than its structured approach?

Client 3

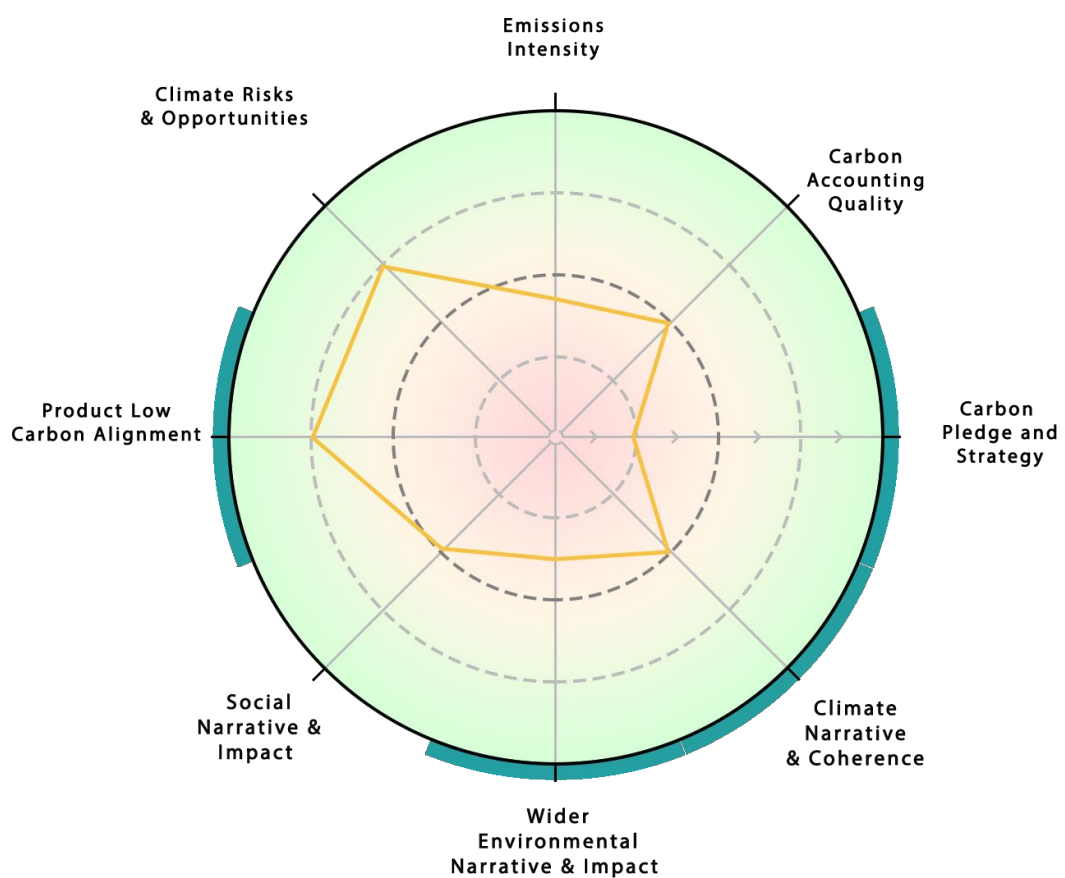


Figure 12. The framework output for the assessment of Client 3, using the first revision of the framework.

A similar approach to working with Client 2 was taken with Client 3, although the outputs and utility of the framework were less obvious, and feedback was limited. Client 3 is a large UK-based heavy vehicles manufacturer that distributes globally and has significant operations in two other developing countries, with sales in one of these countries being greater than those in the UK. Additionally, Client 3 already had a dedicated sustainability officer, who was experienced in understanding the company’s emissions and other ESG impacts.

Upon assessment of the company (see Figure 12), it became clear that this sustainability officer had spent a significant amount of time and resource on assessing and managing the company's impacts and had developed a strategy to put in place a decarbonisation target. Additionally, the company had already invested heavily in low carbon offerings of its originally fossil fuel-dependent vehicles, demonstrating a clear commitment to thriving in the low carbon transition. However, the original work carried out by the sustainability officer had yet to be operationalised and the upper management team had clearly given it little attention. The framework assessment was carried out in the middle of 2021 and the report provided by the sustainability officer had been shared in early 2019. The feedback relayed to the management team therefore focused less on the company's ESG impacts but more on the management team's ability to listen to its sustainability officer.

Since sharing the results of the framework, work with Client 3 has ceased to continue and no feedback on the assessment has been provided. It is expected that the findings of the framework did not align with the companies' expectations and therefore they chose to consider alternative options for understanding their ESG impacts. Working with Client 3 revealed the sensitivities around using the framework within a consulting scenario, as although the framework aims to take an honest and transparent approach to assessing ESG impacts, often this is not what clients always want. Furthermore, Client 3 presents an example of when the researcher's credibility is considered to be too low to advise on ESG issues, therefore leading to a less collaborative assessment process than that demonstrated by Client 2. As a result, this damaged the utility of the framework, further demonstrating the importance of the researcher in the effectiveness of the framework at assessing and advising on ESG issues.

Client 4

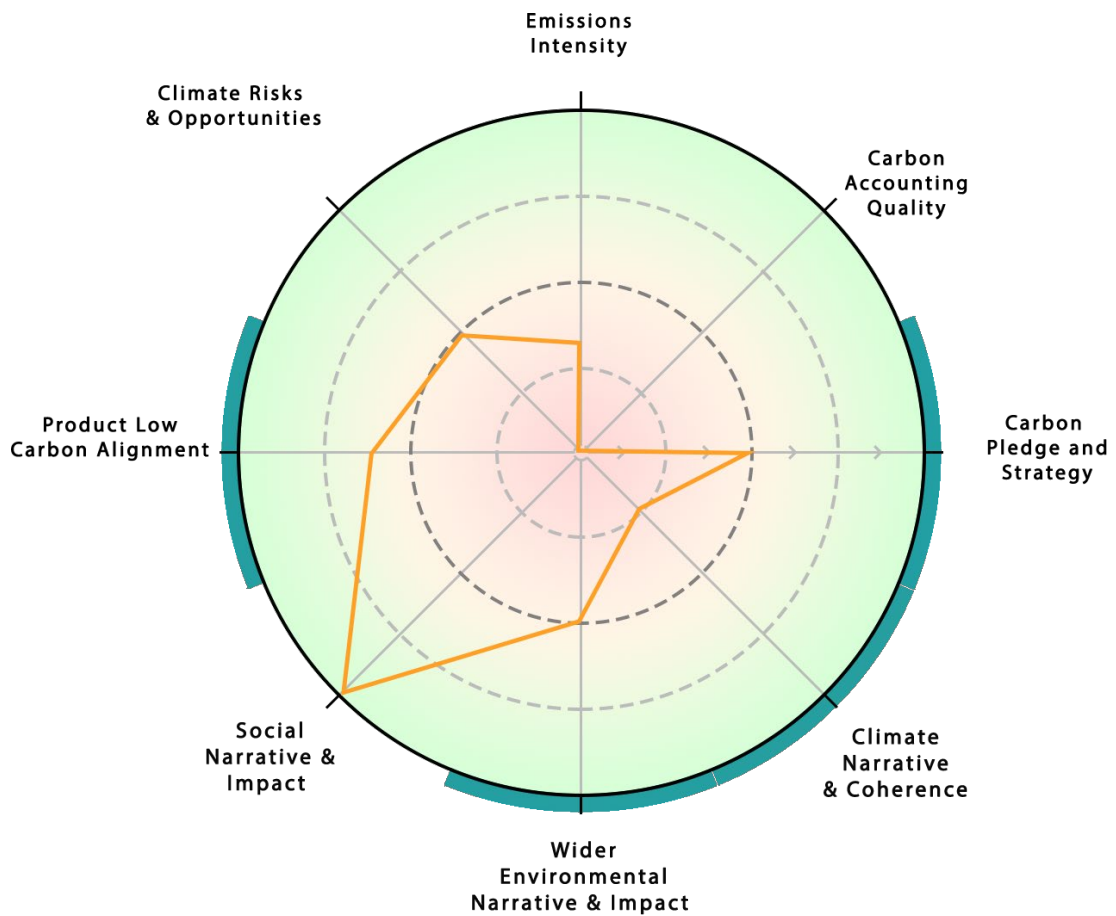


Figure 13. The framework output for the assessment of Client 3, using the first revision of the framework.

Client 4 presents an example of the framework being usable within a short space of time and with limited resource whilst still producing useful results. Client 4 is a medium-size restaurant chain based in the UK, offering high-quality food with a particular focus on enabling improvements to society by donating a portion of its profits to charity. The client therefore already has a public perception of being a company that manages its ESG issues well, and the client admitted that research suggests customers had an expectation that they would therefore manage their climate and environmental impacts well. However, upon assessment with the framework it became clear that the client's climate commitments and the understanding it had of its impact were limited. The largest portion of the clients' emissions were from the meat it sold within its meals and although Client 4 was aware of this issue, it did not realise how significant the issue would be for its impact. The framework allowed the client to have clear perspective on the scale of its emissions in comparison to its other ESG

impacts, enabling greater prioritisation of its actions towards improving its overall ESG performance.

The assessment of Client 4 was carried out within two weeks and relied on limited resource due to particular time constraints. Additionally, Client 4 had published very little information about its approach to ESG issues, meaning the assessment relied heavily on collaborative conversations with clients about how they manage these issues internally. As a result, the results of the framework were heavily dependent on the researcher's ability to extract information from meetings with clients, as much of the client's ESG thinking could be demonstrated by individual management actions, rather than published reports. Client 4's assessment was therefore heavily reliant on the researcher's consulting skills, as well as their experience with environmental and social issues, thus further emphasising the concerns raised following the assessment of Client 2, about the potential for the framework to be used by others outside of SWC. However, importantly this assessment provided clear evidence that the framework could be used within a variety of consulting scenarios and timelines, as previously the assessment process had taken over 3 weeks per company. Additionally, Client 4 has requested repeat assessments using the framework, highlighting that the framework can be used to show company progress on ESG issues rather than just a one-off assessment.

Conclusions from testing with SWC Clients

Understanding the wider utility of the framework was a core objective of this thesis, and the further testing of the framework outside of the investment industry for SWC clients has demonstrated its ability to be used in a range of consulting scenarios and with a range of companies. Both Client 2 and Client 4 found the assessment a useful way of understanding their impact on ESG issues, especially given they had limited experience with these issues prior to the assessment. Moreover, using the framework with these clients demonstrated its ability to adapt to new sources of information, rather than just using publicly available data. The discovery that the framework can be deployed as an effective educational tool, as highlighted by Client 2, presents an interesting opportunity for SWC to use the framework more widely, especially through some of its wider engagement work. Client 4 also highlighted how the framework can be deployed at a variety of different resource levels, thus benefitting

some of SWC's clients who have a limited budget or timeframe with which to complete an assessment.

Although testing the framework with these clients provided clear evidence of its further utility to SWC, it also highlighted some limitations. Client 3 outlined the issue with the framework's subjective and honest approach, as the findings of the assessment did not align with their expectations. This issue is unique to the method of assessing companies in collaboration with their own staff, as the companies tested in the preliminary and final version of the framework did not have an opportunity to respond. Client 3 also demonstrated that often a company's internal understanding of its own ESG impacts may differ greatly from an outsider's perspective, which in itself is an issue, as the company may think it is having a positive impact without concrete evidence that it actually is.

Testing the framework with these clients relied heavily on their investment in SWC and their confidence in SWC's researcher's ability and experience in carrying out the assessments. The assessments of these clients ultimately offer a subjective view that the client has bought in to, having chosen SWC over other consultancies. Although this was not helpful for all Clients where the framework was tested, these assessments demonstrate the utility of the framework where the subjective judgement of the researcher is openly discussed with the client. The client's communication and collaboration with the researcher improved the effectiveness at identifying ESG issues where the client could take meaningful action. However, it is important to acknowledge that this assessment took place within unique consultant-client relationships, and the extent to which these findings can be extrapolated to other companies, industries or ESG assessments is therefore limited.

Conclusions

Central to the focus of this thesis is the ambition to develop an ESG assessment framework that meets the needs of investors and companies without presenting itself as offering objective conclusions on ESG issues. The extent to which current ESG assessments and ratings follow a similar focus is questionable, as highlighted by the extensive and growing body of literature critiquing the transparency, presumed objectivity and overall utility of these assessments. The investment industries' ability to divert capital away from companies that are not responding to climate, environmental and social changes is hindered by these confusing metrics. Instead, these metrics focus on understanding if ESG issues will affect a firms performance over the impact a firms activity may have on society and the environment. ESG ratings that view these issues through a returns-driven lens do not offer investors an opportunity to have a meaningful impact on improving global responses to ESG issues and alternative methodologies are needed if investors are to truly understand their impact. This thesis has attempted to develop one such methodology, drawing on expertise from the investment and consulting industries and through extensive testing on a variety of private and listed equity companies. The extent to which this framework has achieved its objectives are outlined below:

1. Develop a framework that is accessible and transparent in its assessment of companies and clearly outlines the subjectivity of the researcher in the assessment process.

Understanding the extent to which the framework has achieved this objective is challenging for three core reasons. Primarily, this thesis represents the first published version of the framework that demonstrates how it has been used and the particular methodology behind the assessment, which therefore limits its transparency. However, this version of the thesis cannot yet be published publicly due to the commercially sensitive data used to complete the assessment of the 14 listed equity and 3 private companies, despite the redaction of company names. This therefore limits the transparency and accessibility of the framework. However, it is expected that the confidentiality of this assessment will become less pressing within the coming months following the assessment of this thesis. As a result, a publicly available version

of the framework will be published in partnership with SWC whilst still adhering to the needs of SWC's clients outlined in the thesis. Moreover, efforts are already underway to develop a version of the framework that can be used by small businesses to carry out a 'self-assessment' using the framework. Although only in the prototype phase, this would ensure a completely transparent assessment method is placed online that is dependent on the honesty and reflection of the user.

Despite the issues with transparency, the framework has clearly highlighted the subjective inputs of the researcher and other stakeholders in its development and use. Building the framework's structure and principles relied heavily on the experience and judgement of SWC and Client 1. This not only helped to improve the framework's utility for these stakeholders, but also improved its overall effectiveness at identifying ESG issues, as demonstrated by the testing of the preliminary version on 8 listed equity companies. However, throughout this testing, it became clear that the assessment outputs from the assessment of each company were heavily dependent on the subjective judgement of the researcher. This presented several issues, such as the repeatability of the assessment, or the extent to which company assessments could be compared with each other. Moreover, the results of using the framework were heavily reliant on the experience and knowledge of the researcher, which limited the potential for the framework to be used by others with less experience. This issue was compounded by the assessments of SWC's individual clients, where it became apparent that the utility of the framework could be traced to the inputs of individual researchers, and their relationship with clients. Hence, the utility of the framework is clearly heavily dependent on the subjective judgement of the researcher.

Subjective inputs have been identified as an issue by many ESG raters (Kennedy and Hill, 2018; Berg, *et al.*, 2019; Escrig-Olmedo *et al.*, 2019; Boiral, *et al.*, 2020), as it damages the perceived objectivity of the assessment process, which therefore undermines its effectiveness for investors. However, testing the framework with Client 1 highlights the opposite, as the judgement of the framework was essential to developing meaningful conclusions on company's ESG impacts and how they were responding to ESG issues. Without this subjective judgement the assessment wouldn't have been as effective at identifying priority issues, weighing up certain ESG issues against each other or offering Client 1 advice on how best to

engage with its holdings. The testing of the framework on these companies therefore demonstrates the clear potential of openly exploring the subjectivity of the researcher as a tool to improve ESG assessments, rather than attempting to hide it. Conversely, although the subjective inputs of the researcher are clearly beneficial to the depth and detail of the assessment, they also present several limitations. For example, drawing out judgements on ESG issues, carrying out a greater depth of research and summarising data in a way that is evidenced based and accessible takes a significant amount of time. This thesis has only assessed 14 listed equity companies, which cannot compare to the scale and breadth of other ESG ratings providers. It is expected that further testing will streamline the assessment process, but it is unlikely that an openly subjective assessment approach can be carried out at the scale currently offered by large ratings providers. Furthermore, the framework requires a significant amount of training and knowledge exchange to use, as the process of assessment is complex and time consuming. As a result, the extent to which the framework can be carried out by anyone with an internet connection is limited. This could be improved by changes to the framework's structure, but these changes would likely limit the potential to offer in-depth and meaningful assessments of company's ESG impacts. Despite these limitations, the extent to which this objective has been achieved is clearly varied. The testing of the framework has clearly demonstrated where and how subjective judgement fed into the process, although the utility of this judgement is currently constrained to the specific relationship between SWC and Client 1, as they have both the confidence in the researcher's judgement, and the resource to accept the time-consuming assessment process.

2. Demonstrate the effectiveness of the framework at assessing the ESG performance of companies to investors and SWC through sufficient testing on 14 listed equity companies and 3 private equity companies.

The iterative assessment process offered an insight into the way ESG assessments are constructed, demonstrating the subjectivity behind choosing criteria, designing assessment structures, and defining specific indicators. Both the preliminary and final version of the framework proved to be effective at identifying ESG issues for the companies assessed. However, the heavy weight placed on the 'E' in ESG in the framework is obvious throughout the assessment. This is largely due to the experience of SWC in assessing environmental

issues, as the consultancy is focused on responding to the climate crisis rather than issues of social justice. Recognition of the interconnectedness of these issues is displayed through the final output of the framework, as it is impossible for the overall assessment to be viewed without some indication of a company's impact on society being prevalent. Moreover, the input from Client 1 on limiting the social focus of the framework represented a valid concern, given that they already carried out a large amount of research in this area. The potential for SWC and Client 1's research teams to collaborate could be explored further in the future, in order to update this assessment.

The potential for biases to weigh on the assessment of both the listed equity companies and private companies may also hinder the effectiveness of the framework at reaching reliable conclusions. SWC has a particular position on certain ESG issues that have fed into the criteria of this assessment, which may differ from others in academic and professional circles. The importance of validating these positions throughout the framework is emphasised by this thesis, as other ESG ratings take similar positions, but without disclosure of what they are. Hence the transparency of this assessment aims to remove the potential impact of biases on the final results for each company. However, the extent to which it is possible to remove biases from the assessment is uncertain, given that many of these ESG issues boil down to particular moral and ethical positions that are often inherent to individual opinions (Eccles, Lee and Strohle, 2020). As a result, it is expected that the framework will continue to be vulnerable to biases, but this may not be a disadvantage. If the biases of the framework can continue to be outlined clearly, then investors are more aware of the way the assessment has been constructed than if these biases were hidden. These biases also represent an issue for the potential standardisation of ESG assessments, as although standardisation may help reduce the disparity between ESG ratings for the same company it will still be challenging to completely remove ESG practitioner's views from the assessment process (Kennedy and Hill, 2018).

The assessment of both listed equity and private companies demonstrated the framework's effectiveness using a variety of data sources. There is ample data in the public domain for the framework to assess listed equity companies, aside from companies that still struggle to report emissions data. Furthermore, the fact that a company does not disclose any

information on ESG issues can often be more telling than not, as demonstrated by low scores for companies with poor disclosure in the preliminary and first revision framework tests. However, using purely publicly available data does have its downfalls. Often the assessments were heavily reliant on the stories companies had constructed around their own ESG impacts, making researchers prone to being influenced by convincing arguments and potential greenwash. This is where the importance of an experienced and reliable researcher is further demonstrated, as without this experience then it is likely the research would take much of what a company says to be true. The ability to question, research and challenge company reporting is a skill that was developed throughout the use of the framework, and it is likely that as further testing is carried out the framework's effectiveness will continue to rely on the researcher behind it. This raises two issues: can the framework be used by anyone other than SWC employees? And how can the reliability of the person using the framework be ensured? One danger of releasing the framework publicly is that its subjective approach can allow for anyone to rate a company however they like, meaning scores could be fabricated to improve how a company's ESG performance appears. The testing process attempted to remove any potential for this to happen by continual peer review of the findings and discussion within the SWC team, but this would be challenging within the public domain. Thus the effectiveness of the framework is clearly dependent on an experienced and technically capable researcher behind its usage.

3. Ensure this framework is of value to investors and companies alike in helping them understand their ESG impacts and improve their ability to manage these impacts.

The testing process proved to be of great value to both Client 1 and SWC and the framework continues to provide useful insights on ESG issues to both. Client 1 has used the findings from the assessments in a number of engagement opportunities within the companies assessed. These meetings show the direct potential of the framework to impact real world investment decisions and shape the way investors engage with their holdings. Feedback from these meetings highlighted how Client 1 felt more informed about the relevant ESG issues relating to that company, which improved their ability to engage on these issues. Additionally, Client 1 gave SWC the opportunity to present the findings of one assessment to the company that

was assessed, demonstrating the confidence Client 1 has in the framework's ability to offer meaningful solutions for companies to better understand their ESG issues. Client 1 continues to invest in the development of the framework for SWC and has issued the assessment of 3 more companies that is currently ongoing. They have also reached out to a variety of other sustainable investment initiatives, looking to scale up the framework and demonstrate its ability to better understand ESG issues. The assessments have also been used to challenge internal opinions on climate issues, encouraging debate about the best way Client 1 can manage its own ESG impacts. Moreover, Client 1 is keen to develop the framework's wider environmental impact and narrative assessment to provide a more comprehensive assessment of a company's impact on biodiversity. Hence the framework has clearly been of great value to Client 1, especially as they continue to invest in its development.

Although the utility of the framework has been demonstrated for Client 1, they only represent a small share of global investors. To better explore the framework's utility, further tests are needed with a variety of different financial services providers. Client 1 takes a largely unique investment approach, operating at long time scales, which benefits the framework's effectiveness given the amount of time it takes to carry out each assessment. Other investors may struggle to justify allocating this much time and resource to one specific company, when the turnover of companies in their portfolio is likely higher than Client 1's. Testing the framework on a greater variety of companies would also improve its ability to highlight industry or country specific issues that a large number of companies aren't dealing with. However, the extent to which the framework can be scaled to assess more companies is limited, given the significant amount of time it takes to carry out an assessment. SWC have attempted to improve the turnover of company assessments by increasing the resource allocated to them. A simplified version of the current framework may also enable faster assessment times, which would make the assessment more attractive for investors looking to understand the impact of a large number of companies.

Further implications to the potential for the framework's findings stem from the particular political and economic context in which it was used. The testing period took place during the COVID19 crisis, which although globally caused economic instability, Client 1's investment performance was uniquely positive. As a result, this could have influenced the time and interest given to the assessment framework. Equally, the world of ESG was experiencing a

rush of investment and interest globally which could have likely influenced Client 1's decisions around the framework's ESG assessments of certain companies. Within the period of writing the thesis the ESG landscape has changed drastically and is increasingly becoming more political. It would be interesting to further explore the potential for the framework to be used under different temporal contexts and as the investment industry's approach to ESG issues continues to change. Moreover, the extent to which the framework is capable of responding to particular climatic and economic shocks has not been tested and may be a worthwhile avenue for further research.

The utility of the framework is much clearer for SWC. The framework has generated a new revenue stream for SWC to market its consulting services and help companies identify where they can have the most impact on the climate and ecological crisis. It is estimated that the framework has generated around £250,000 in revenue, with several projects set to continue into 2022 that involve the framework's usage. It has led to the creation of 2 new full-time positions within SWC. Furthermore, the framework assessment tool has wider applications outside of just the investment industry. The framework continues to be attractive for companies who have little to no experience with managing their environmental and climatic impacts, as demonstrated by the assessments of Client 2 and Client 4. The development of an online tool that use the framework's structure and criteria will also allow SWC to reach a wider audience and work with companies it previously did not have resource to support. The framework contributes to SWC's long-term goals to reshape the ESG industry towards a more transparent and openly subjective future.

Ultimately, the framework's development, testing and results have been of significant value to the stakeholders in this thesis. This is promising for the potential uptake of the framework when it is released into the public domain. However, more testing is clearly needed with a variety of other stakeholders before this can happen, as the certainty around the framework's utility relies on specific client interests. Testing the framework with other investors, and across a variety of industries, is likely to increase its utility and potential to reshape the way investors think about ESG issues.

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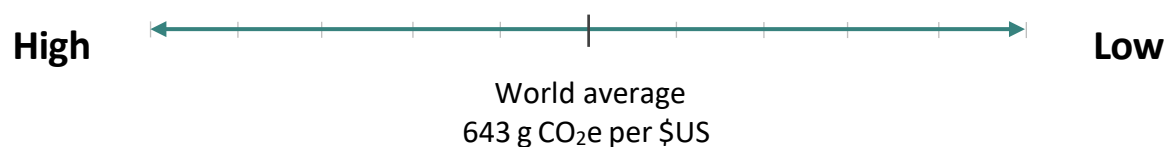
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Appendices:

Appendix A: Preliminary Framework Version Criteria

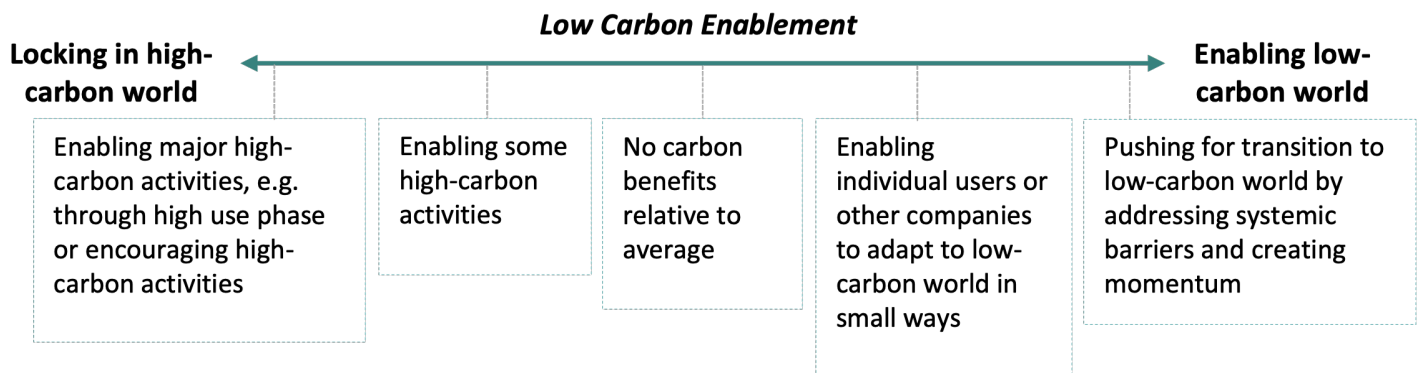
Appendix A.1: Emissions Intensity Criteria



Appendix A.1 - Diagram showing the scale for the emissions intensity assessment.

The criteria for ranking a company on the emissions intensity scale is dependent on how the estimate of the company's emissions compares to the world average, taken from SWC's Environmentally Extended Input Output model (EEIO). The world average is the average emissions intensity of all the 34 sectors across 55 countries within SWC's model, including the financial sector. The points on the scale from 'High' to 'Low' emissions are used to guide the position of company comparison. Each point either to the left or right of the scale represents a decrease or increase of a factor of 2, respectively. This scale was chosen to demonstrate clearly where a company sat compared to the average. For example, if a company sat one point to the left of the scale then its emissions would be double the global average and vice versa if they were sat to the right. The world average has been used to order to give a rough idea of how the company's emissions compare to a global baseline. Within Appendix D, the emissions intensity assessment shows that the company was also compared to sector averages globally and regionally in order to provide more context. Emphasis was placed on the fact that these averages were based on rough outputs from the EEIO model and not based on empirical evidence.

Appendix A.2: Low Carbon Enablement Potential Criteria

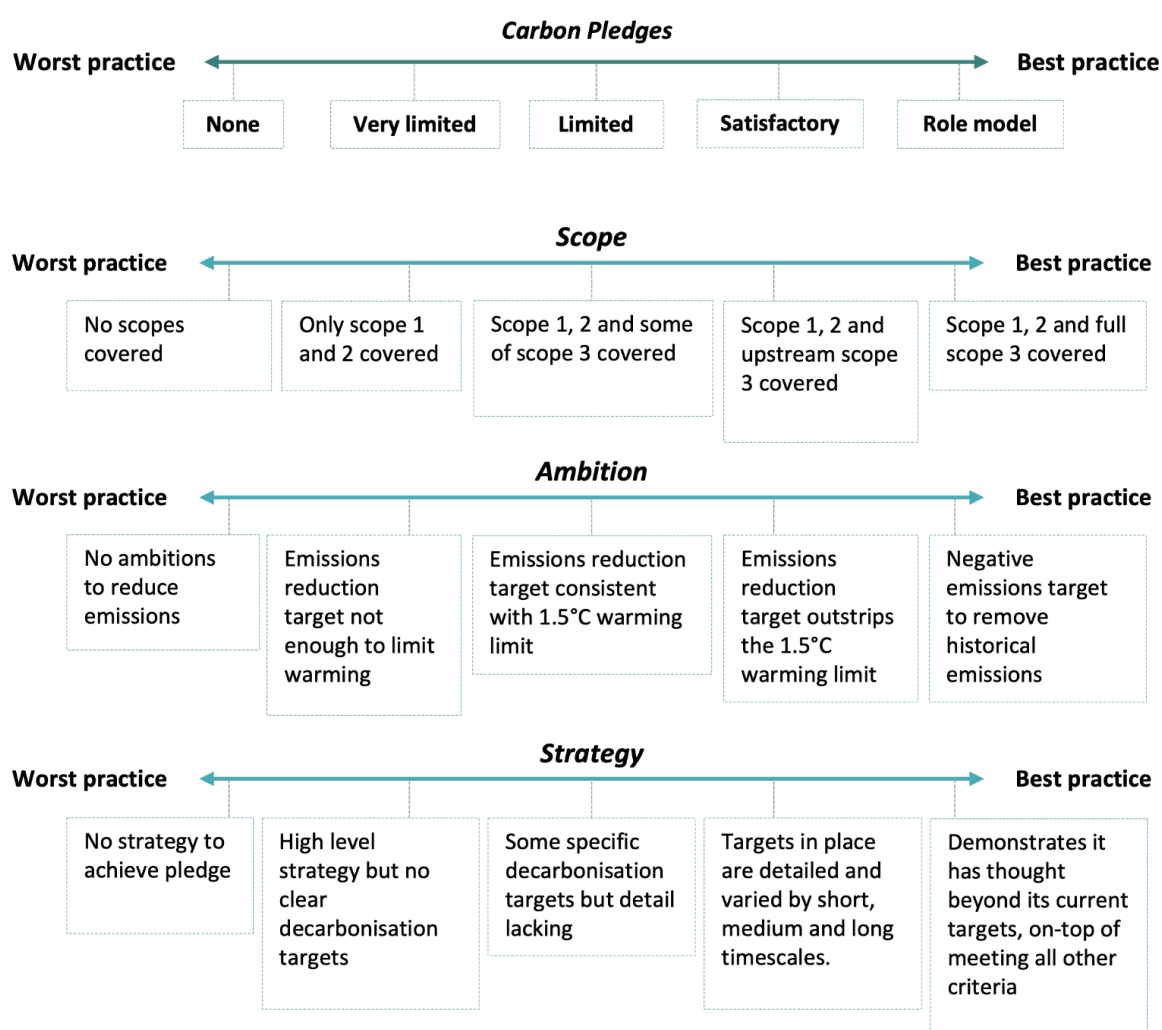


Appendix A.2 - Diagram displaying the assessment scale and criteria for the Low Carbon Enablement assessment area.

The criteria for assessing a company’s low carbon enablement potential focuses on whether the core purpose of the company works to either push for a low carbon transition or lock the world in a high carbon future, as displayed in Appendix A.2. It is expected that companies

involved in heavy-polluting industries will be ranked towards the left of the scale, whereas companies investing in climate solutions or disturbing high-intensity industries will be ranked towards the right. It is also important to recognise that some companies may sit in the middle, where the net impact of the company neither has a significant negative or positive effect on emissions. Data from company reporting, such as annual reports and research into the industry they operate in, is used to make this assessment.

Appendix A.3: Carbon Pledges Criteria



Appendix A.3 - Diagram displaying the criteria for the carbon pledges assessment, including the indicators that contribute to the overall assessment.

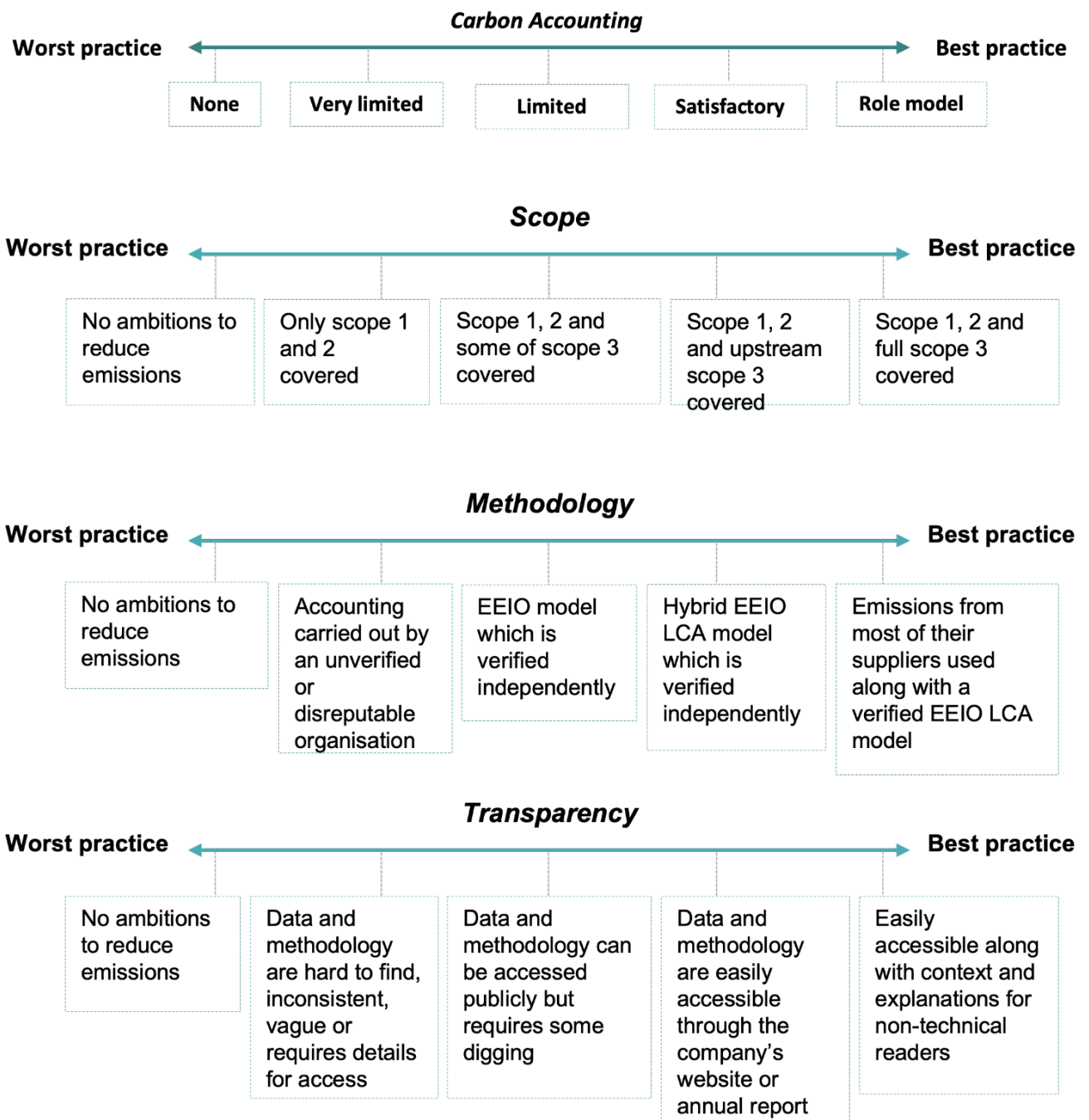
The carbon pledges overall assessment ranking followed a similar structure to the carbon accounting section, as they have a similar emissions focus and have the highest possible number of indicators out of all the assessment areas. Similarly, the scope indicator mirrors

the carbon accounting scope indicator, as companies that include their full emissions within their decarbonisation target should be rewarded within the assessment over companies that only include a limited scope. The criteria for the ambition of the pledge are more complex to define and focus on understanding whether the pledge is consistent with 1.5°C warming limits (IPCC, 2018). Rather than carrying out quantitative scenario testing, Client 1 requested that we qualitatively assess the extent to which targets were aligned. If a company's pledge was classed as being aligned with 1.5 degrees was based on a set of qualitative factors defined by SWC within the scope, ambition and strategy assessments, rather than a quantitative alignment assessment.

Companies can only reach the exemplary status if they have set a pledge to account for their historical emissions and continue to withdraw more carbon from the atmosphere than they produce. This final criterion was included given SWC's experience with clients willing to go beyond the ambition of 1.5°C and set negative emissions targets. Finally, the criteria for strategy ranges from whether the company has a strategy at all, to whether it has specific decarbonisation targets set over a varied timeline and whether it demonstrates thinking beyond its current targets towards setting new ones. The criteria were laid out this way to focus on the long-term goals needed in order to continue decarbonising towards 2050 and to make sure the company had also included enough detail in its targets so as demonstrate its commitment to achieving them.

Assessments for each indicator were aggregated into the overall score in line with the framework user's discretion, rather than taking an average. It was found that an average often led to certain important aspects not being weighted correctly and therefore companies weren't scored accurately in the eyes of the researcher. As a result, and inline with the focus on emphasizing the subjectivity of the assessment process, the user of the framework carrying out the assessment self-determined the aggregation based on their expertise and knowledge of the company, followed by peer review from other SWC reviewers. This approach was also applied to the carbon account and climate narrative.

Appendix A.4: Carbon Accounting Criteria

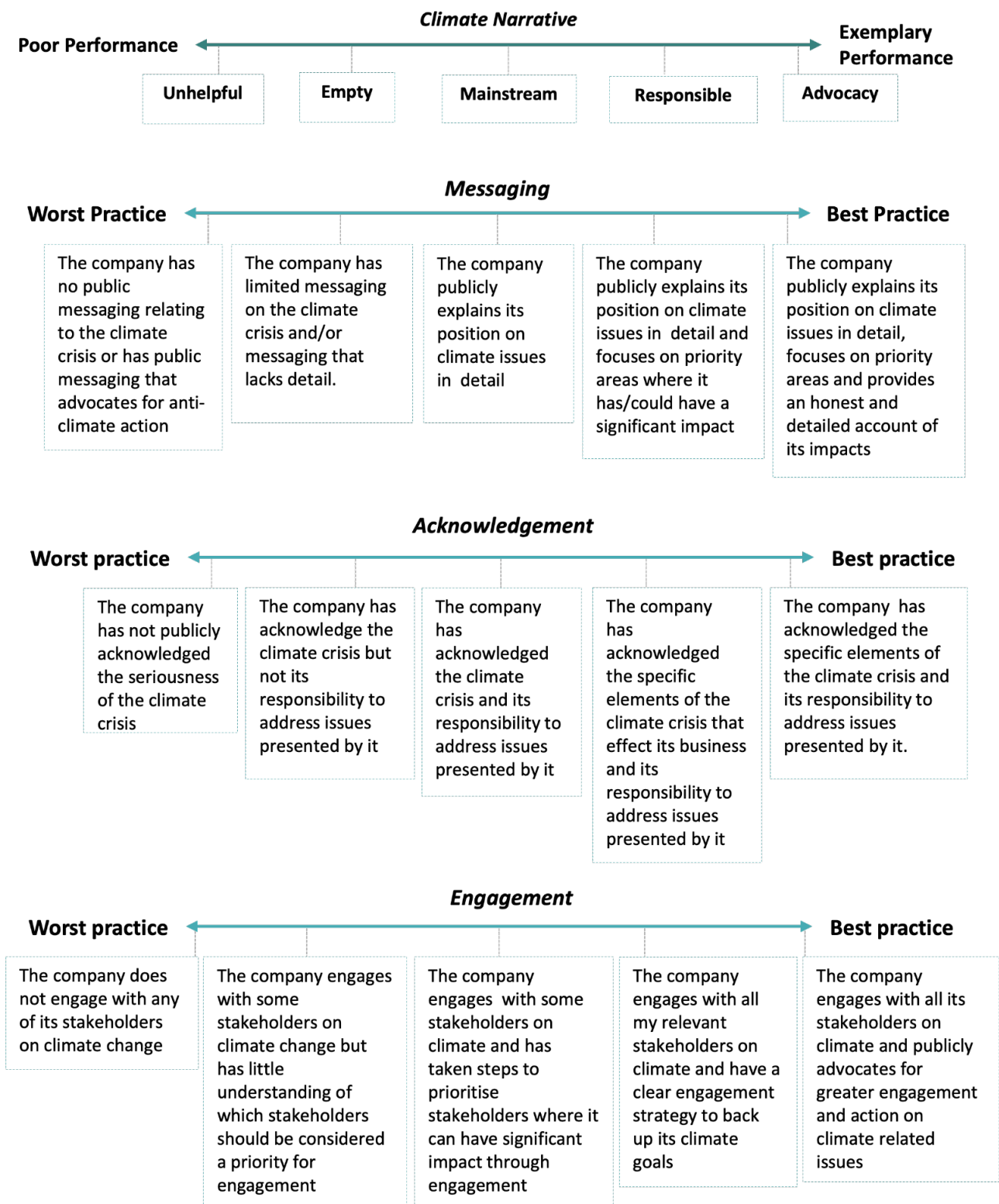


Appendix A.4 - Diagram showing the scale used to assess the carbon accounting of companies and the indicators that contribute to this assessment.

The criteria for assessing the carbon accounting of companies are more specific than the other areas, as there is already a growing effort to standardise carbon accounting practices. Given the high number of indicators for this section (see Appendix A.4) it was decided that the overall assessment ranking should be simplified to clear positions along the scale, from companies with no carbon accounting on the left and those setting an example to others on

the right. The scope indicator criteria rewards companies based on the coverage of their total emissions. This indicator was deemed to be a priority within the overall assessment of carbon accounting, as many companies fail to include their scope 3 upstream emissions in their reporting (Depoers *et al.*, 2016). In order to reflect this priority, the scope assessment carried the most weight in producing the aggregate carbon accounting score. Secondly, the methodology criteria were designed to reward companies that use a verified hybrid EEIO Life Cycle Assessment (LCA) model to calculate their emissions. This preference was supported by SWC, as this is the type of model they use to estimate emissions. Additionally, EEIO hybrid LCA models are both system-complete (they don't miss any emissions) and avoid the truncation error of just using an LCA-based model, thus benefiting the robustness of the model's emissions estimates (Kennelly, *et al.*, 2019). Finally, the transparency section focused on understanding how easy it was to find the company's emissions data and whether it was reported in an accessible way. Companies that provided an accessible path to their data and also explained the meanings behind complex emissions terminology were rewarded, whereas companies that made it challenging to find their emissions or included a data collection form in order to access them, were downgraded on the assessment scale.

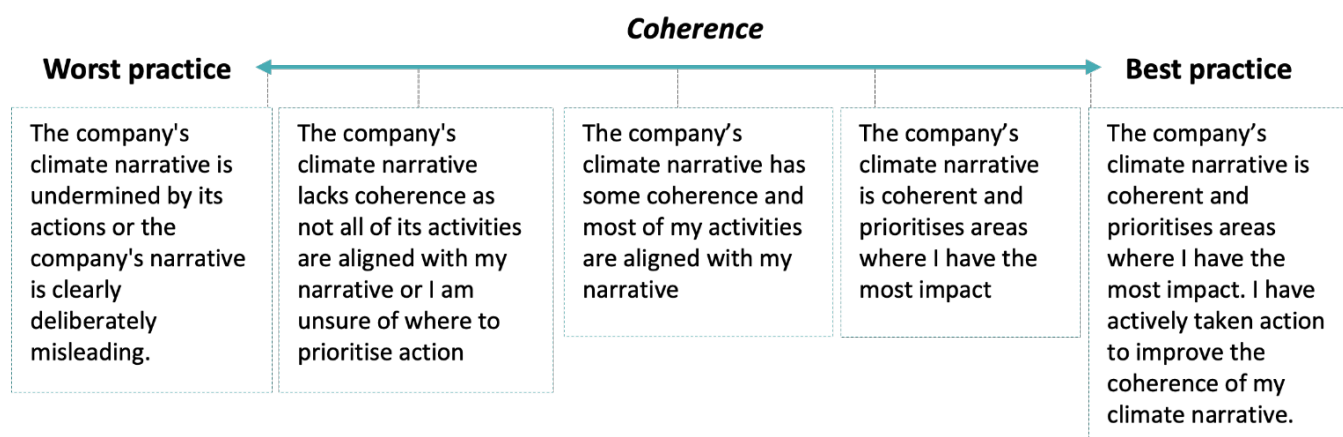
Appendix A.5: Climate Narrative Criteria



Appendix A.5 - Diagram showing the scale used to assess the carbon accounting of companies and the indicators that contribute to this assessment.

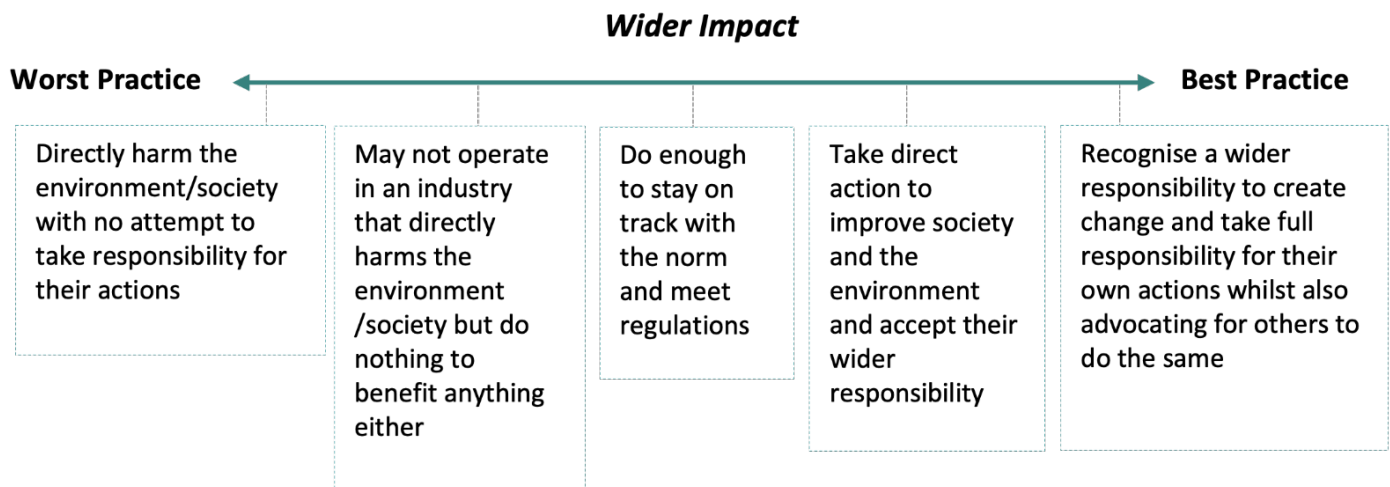
The climate narrative of each company is assessed on the extent to which the narrative is either advocating for the low carbon transition or directly hindering the low carbon transition. Three indicators are used to make this assessment. Firstly, the messaging of the company is assessed, exploring the extent to which the company publicly explains its position on the climate crisis in detail, or whether it actively advocates for anti-climate action, such as less emissions regulation or arguing against a carbon price. Some companies may not directly advocate for anti-climate action but may not explain their position on the climate crisis in enough detail, suggesting ambiguity on their position and a lack of commitment to achieving meaningful action on the climate crisis. Secondly, the assessment looks at the extent to which the company acknowledges the climate crisis as an issue to its business, assessing the extent to which the company recognises that the crisis will prevent the company from following business as usual. Additionally, this indicator looks at whether the company acknowledges that it has an impact on the climate crisis and whether it explains these impacts in detail. Finally, the criteria for the engagement indicator varies from the company engaging with all of its stakeholders on climate-related issues and advocating for greater climate action, to the company engaging with no stakeholders and actively pushing for less climate action. Some companies may engage with only a few stakeholders, or not identify which stakeholders should be a priority for engagement in-line with the scale of their impact.

Appendix A.6: Climate Coherence Criteria



Appendix A.6 Diagram showing the scale used to assess the climate coherence of companies and the criteria used to carry out this assessment

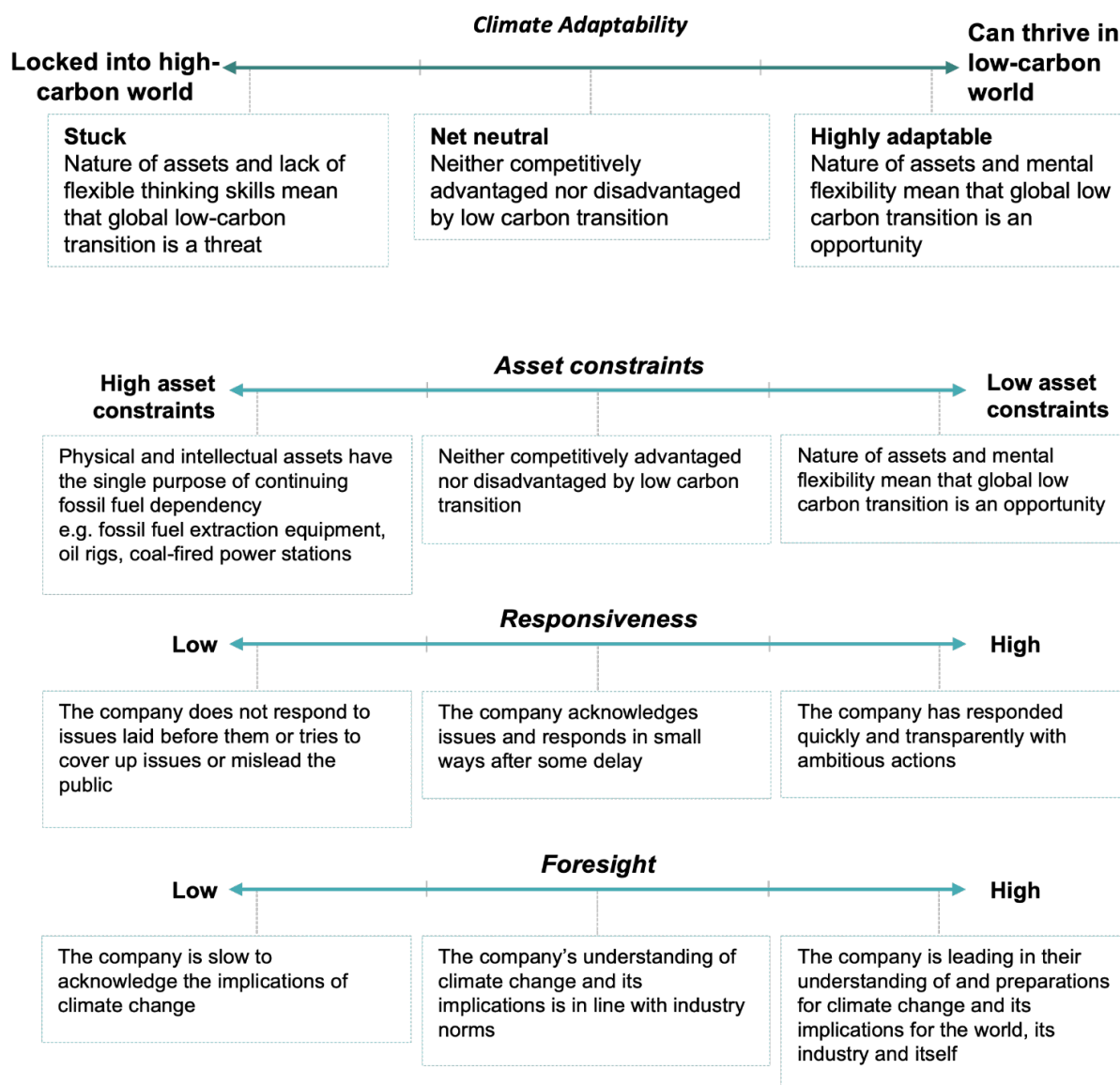
The criteria for the company's climate coherence varies from the company fully backing up its climate narrative with clear actions and a prioritisation of where it has the most impact, to the company deliberately misleading stakeholders with its narrative. Companies that take actions that do not align with its narrative, such as investing in a new coal mine whilst advocating for reductions in global energy emissions, are ranked towards the left of the assessment scale. Some companies may demonstrate some coherence between their narrative and actions but may not provide enough evidence or detail to be considered completely coherent, reflected in the criteria across the scale. Coherence is deemed to be a vital assessment area as increasingly companies are making claims about their environmental performance that are either contradicted by their actions or which they do not have sufficient evidence to back up (Lyon and Montgomery, 2015).



Appendix A.7 - Diagram showing the scale used to assess the wider impact of companies and the criteria used to carry out this assessment

The climate crisis is inherently a multifaceted and complex issue, and this assessment area aims to reflect the connection between climate, environmental and social issues. However, despite the interconnected nature of these issues, it is challenging to assess companies' impacts on them in a coherent and meaningful way all at once. As a result, the assessment has been divided in to two indicators of environmental and social issues. The decision to keep these assessments separate, but as indicators not individual assessment areas, is to ensure that the overall 8 assessment areas do not become overly complex, as there was a concern that the framework may be challenging to summarise within a single output with over 8 assessment areas. The wider impact criteria vary from the company demonstrating clear recognition of its impact and responsibility to improve the lives of the people and environments its business affects, to it actively causing harm to people and the environment with little acknowledgement or action. The assessment area carries less weight than the others in this version of the framework, given the requirements of Client 1. However, the criteria still aim to distinguish harmful companies from those that have a positive impact, which is an important factor within the overall assessment. The indicators have not been divided into separate assessment areas as there was a concern that this would emphasise that a similar level of resource was allocated to this assessment, when in-fact considerably less time was spent on assessing this area in the preliminary version.

Appendix A.8: Climate Adaptability Criteria



Appendix A.8 - Diagram showing the scale used to assess the climate adaptability of companies, the criteria used to carry out this assessment and the indicators that contribute to the overall ranking.

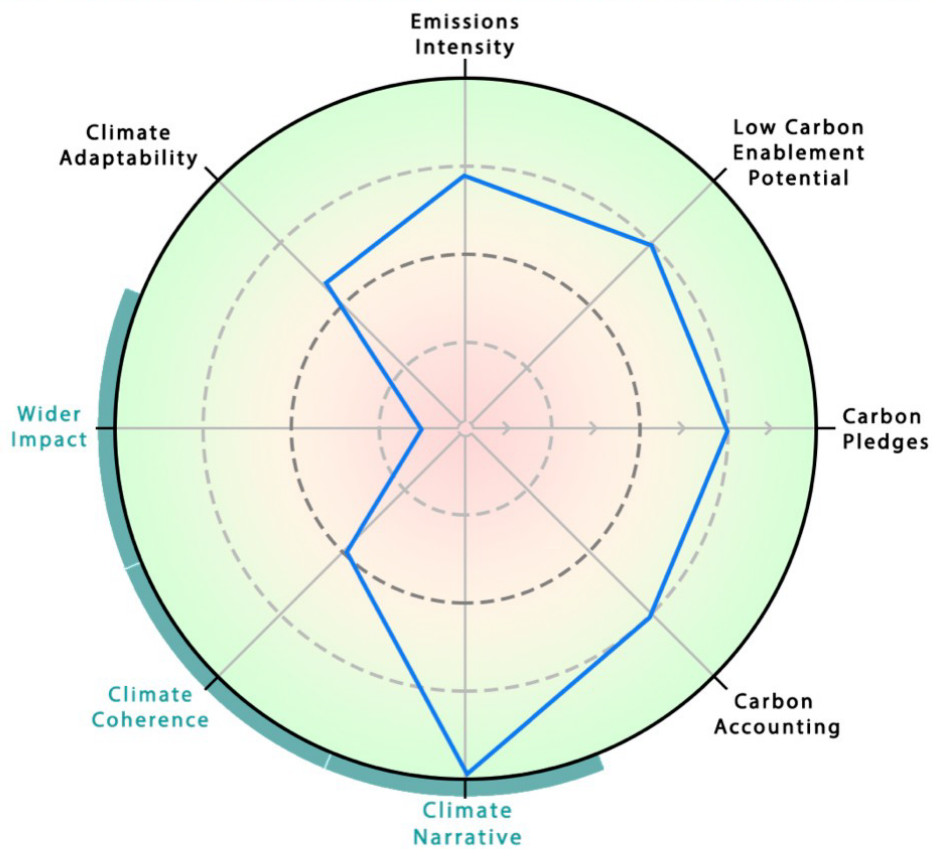
The climate adaptability criteria are structured differently to the other assessment areas, as the frequency of criteria was deemed to overcomplicate the assessment. Thus each indicator assessment was reduced to 3 rather than 5 different sets of criteria. The main assessment criteria also benefit from clear headlines to each criterion, aiming to make the distinction between different criteria simpler. These simplifications were put in place to avoid confusion around this assessment area and also to stress a level of greater subjectivity to this assessment, given that it was a forward-looking assessment affected by large uncertainty about the future low carbon transition.

Company D

Company assessment summary

Overview:

Company D's September 2020 commitments to climate change have improved our original assessment of them, primarily on their climate narrative as a result of their new 'climate change information centre'. They do well on the renewable energy (RE) front by establishing new tariffs and aiming for 100% RE by 2020. Additionally, their new pledges commit to achieving net zero by 2030 in their entire value chain, with their operations already being net zero in 2020. They have also upgraded their carbon accounting to cover all upstream scope 3, something we marked them down for originally. While having the potential to save emissions from travel by enabling people to stay in touch online, they also encourage consumption through advertising, including for high-carbon products, and they allow adverts by climate denial groups. Company D could in principle adapt its business model to the low-carbon world quite well but there are indications that they take a reactive approach in the way they deal with numerous human rights and privacy scandals. If this approach is also reflected in their response to climate change, it could stand in their way of adapting to the low-carbon world. However, their recent commitments give us hope that the company is realising the importance of climate change and the need to act.

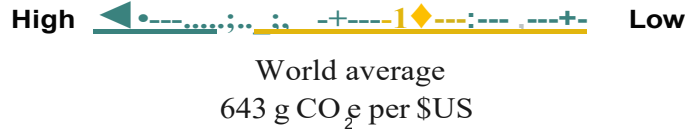


Confidence scores: High  Medium  Low 

Emissions Intensity

Confidence: High

Upstream and operational GHG emissions intensity (exponential scale)



Company D's total operational and upstream emissions intensity comes in at 84g CO₂e per \$US which is lower than the US average of 224 g CO₂e per \$US and around 5 times lower than the global average. This could be expected of an online-based tech company whose revenue primarily arises from ad revenue on their social media platforms.

Low Carbon Enablement Potential

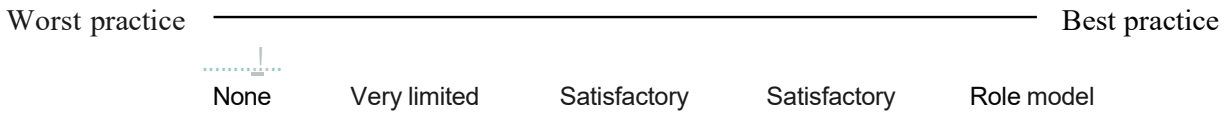
Confidence: High



Thanks to the electrified nature of ICT and Company D's high renewable energy use, their users' footprint is quite low. They also enable access to renewable energy for other businesses by establishing renewable energy projects or tariffs. Company D allow people to stay in touch without the need for physical travel. However, advertisements hosted by Company D, which make up the majority of their revenue, have the potential to increase downstream emissions by encouraging consumption. Advertisements on Company D currently include high-carbon products and services, such as fossil fuel companies and airlines.

Carbon Pledges

Confidence: High



- : Company D's latest pledge is to be net-zero across their value chain by 2030. They target 100% renewable energy use and carbon-neutral operations (scope 1 and 2) beyond 2020.
- : **Scope:** Their pledge covers "operational" and "value chain" emissions which are scope 1, scope 2 and upstream scope 3 emissions.
- : **Ambition:** A net-zero target by 2030 is ambitious as it is a whole 20 years ahead of the IPCC 1.5°C target of 2050.
- : **Transparency:** The sustainability section of their corporate website, in which their pledges can be found, is simply laid out, easy to navigate, and also features simple language for non-technical audiences.

Carbon Accounting

Confidence: High **t**

Worst practice Best practice

None Very limited Satisfactory **Satisfactory** Role model

As of September 2020, Company D's carbon accounting practices are in good shape. They have reported scope 1 and 2 emissions since 2012 although they now also report upstream scope 3. Scope: Company D report scope 1 and scope 2 as well as upstream scope 3 emissions broken down into the GHG protocol categories.

Quality of methodology: Company D state that they use a hybrid EEIO LCA model that's verified by a 3rd party. This is a robust way to estimate scope 3 emissions.

Transparency: Emissions are reported on Company D's Sustainability website and are easy to find as well as simply laid out for non-technical audiences. They could, however, say a bit more about their methodology for technical audiences as well as the public.

Climate Narrative

Confidence: High **t**

Unhelpful Helpful

Unhelpful Empty **Mainstream** **Responsible** Advocacy

As of September 2020, Company D, have released a whole host of climate related material and really upgraded their approach to climate change. This includes a new net zero by 2030 pledge as well as improving the quality of their emissions reporting. Most importantly, Company D have started to recognise their responsibility to educate their users about climate change and to discourage false information being posted on their platform, after an article in the New York Times earlier this year exposed how climate deniers use a loophole in Company D's content policing. We originally marked Company D down due to their failure to provide easy access to accurate climate science but their new 'climate change information centre' ticks all the boxes on this front. We hope this new approach can stand the test of time and Company D continue to update their information centre but the recent effort they have made warrants a serious improvement to their ranking in our framework.

Climate Coherence

Confidence: Medium **()**

Low coherence High integrity

Incongruent and misleading Some integrity Honest and congruent

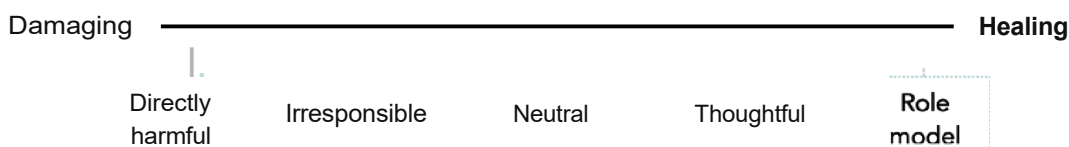
Company D are marked down for their historically slow uptake of climate policy within their organisation. Until September this year Company D appear to have only responded to external pressure from users and institutions like Greenpeace, who forced Company D's hand back in 2012 with their 'unfriend coal' campaign. Greenpeace remain strong critics of Company D but appear to have had a strong impact on the company, pushing Company D down a renewable path that it now seems committed to following. Company D is also marked down for their delayed response to removing fake news on climate change as they have only recently started labelling certain

3"

content as false. We are unsure if their new content policies apply to adverts, as we could still find active climate denial adverts on their ad library page. Ultimately, Company D's track record brings down their integrity on climate change, but we are keen to see if they can improve this by following through with their new narrative.

Wider Impact

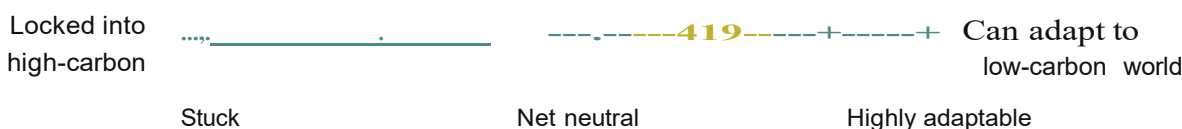
Confidence: Medium **0**



Company D bring people closer together online, which has proved to be increasingly valuable during the Covid-19 pandemic. However, this improved connectivity comes at a cost as Company D has repeatedly failed to properly address the privacy issues with its platform. The 2020 Civil rights audit of Company D highlighted a plethora of issues alongside privacy concerns, including their CEO's determination to protect a particular definition of free expression that ultimately allows harmful and divisive rhetoric to be spread on the platform. Most importantly, Company D's entire business model focuses on maximising user engagement to bring in advertising revenue. The most engaging content tends to be inflammatory and their content algorithm allows for this, prompting the #stoptheforprofit campaign this year. There have also been accusations of meddling in the US and Brazilian election and Brexit referendum enabled by political profiling. Company D continue to brush these issues off rather than dealing with them properly as the company repeatedly fails to acknowledge their responsibility for the wider impact they have on society.

Climate Adaptability (Assets & Thinking skills)

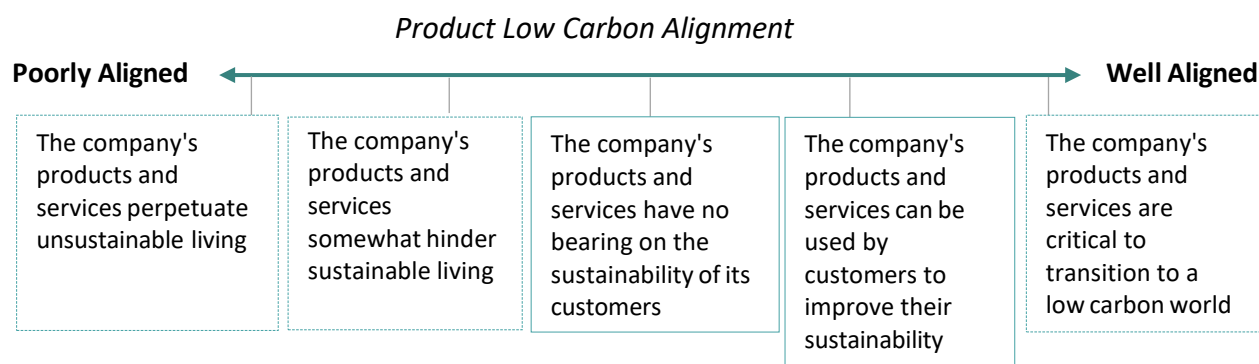
Confidence: Low



Company D's assets are well aligned with the low-carbon transition. However, Company D have a track record of being reactive rather than proactive in their response to criticism, often remaining silent for long periods and responding only after mounting pressure with tentative measures that are not always sustained. They do not seem to be attuned to changes in public opinion or willing to respond to it. There is also little evidence that they understand the physical risks of climate change for their business and the need to adapt and increase resilience to these risks. This might indicate that they could struggle to prepare for and respond quickly to changes associated with the low-carbon transition. Nevertheless, their recent commitments give us hope that the company is realising the importance of climate change and the need to act.

Appendix C: First Revision Changed Framework Criteria

Appendix C.1: Product Low Carbon Alignment Criteria

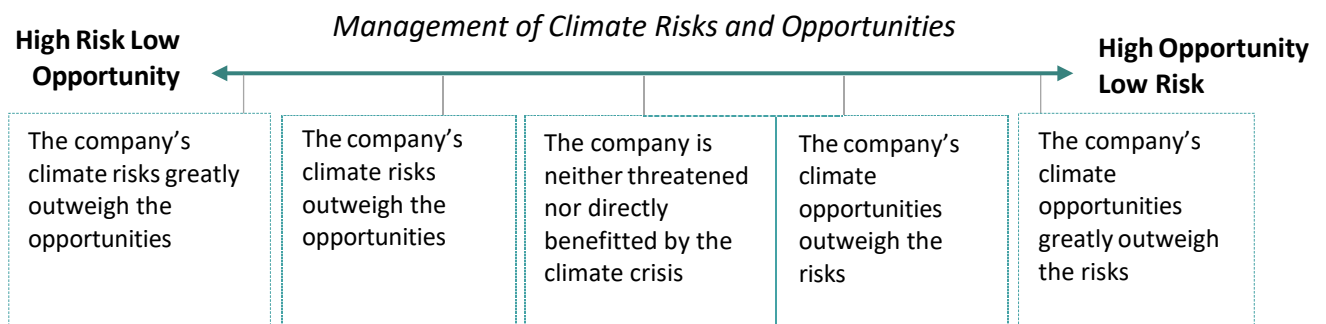


Appendix C.1 - Diagram showing the scale used to assess the product low carbon alignment assessment area in the first revision version of the framework.

This assessment area builds on the 'Low Carbon Enablement' section used in the preliminary testing version. The feedback from Client 1 and from the results showed that the assessment was too heavily focused on uncertainties around the extent to which a company has an impact on its customers' emissions. For all 8 of the companies assessed, these downstream impacts centred around their products. As a result, the assessment has been shaped to understand how these products or services might be aligned with the low carbon world, rather than just focusing on downstream emissions. The assessment therefore aims to understand whether the products or services a company provides will help or hinder our transition to a low carbon economy. Appendix C.1 displays the scale and criteria used to carry out this assessment. The assessment is based on the company's core products, with priority given to products that the company generates the most revenue from. Products are considered to be essential to the low carbon transition if they can clearly demonstrate they are enabling emissions reductions or replacing a product/service that is more emissions intensive. The assessment is not entirely based on the product itself. For example, if two companies were assessed that both mined and sold copper, but one company uses all electric vehicles in its operations, then that company would be more aligned than the other. Thus changes to the company's management of its climate impacts are also considered as benefitting alignment. Equally, if assessing two oil and gas companies, one of which had invested heavily in renewable energy and

demonstrated a clear plan to run down fossil fuel assets, whilst the other had applied for more licences to continue extraction, it would be expected that the former company would be more aligned. However, the inherent high carbon nature of the company’s product would still warrant a low score on the scale.

Appendix C.2 Management of Climate Risks and Opportunities

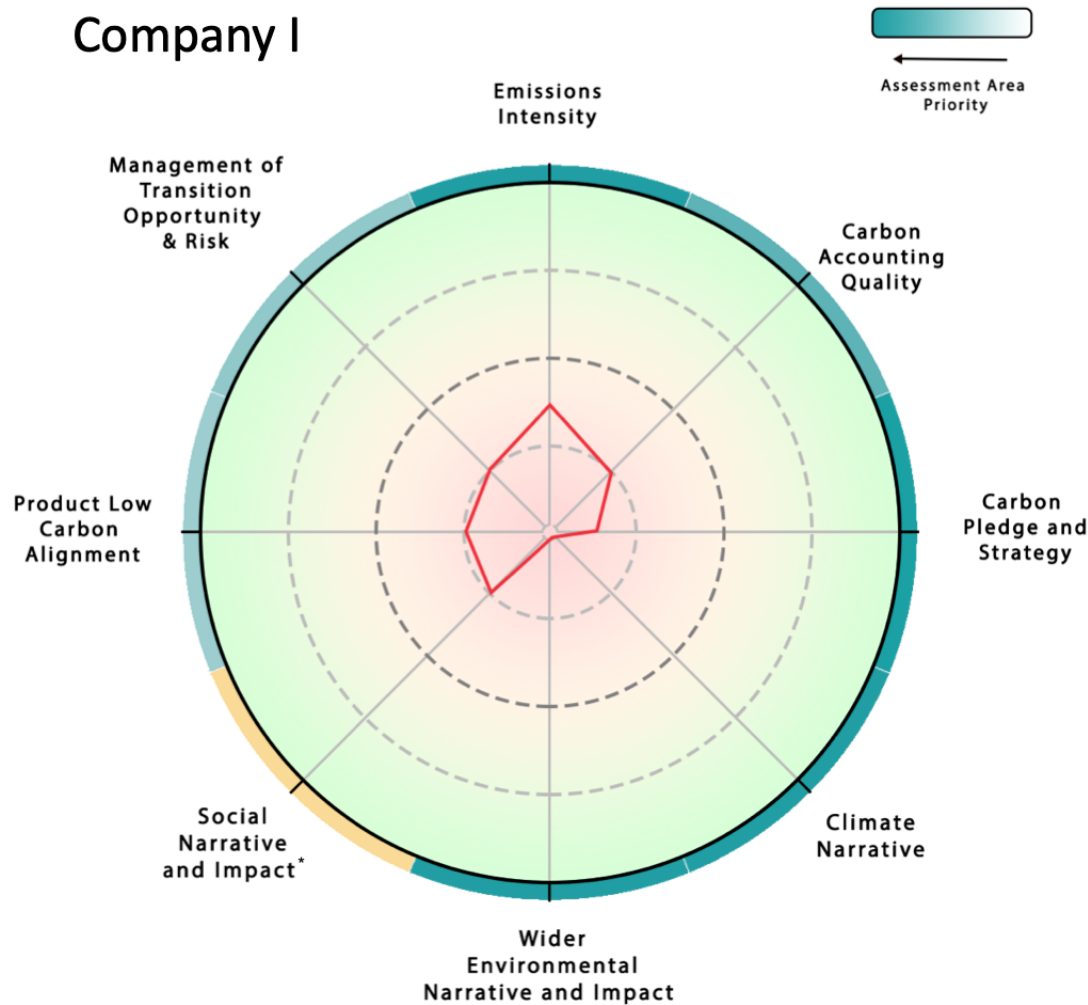


Appendix C.2 - Diagram showing the scale used to assess the Management of Climate Risks and Opportunities in the first revision of the framework.

Appendix C.2 displays the scale used to assess companies against the Climate Risks and Opportunities assessment. Companies vary from being a high risk, with low chances of finding opportunities from the climate crisis, to low risk and high chances of finding opportunities. Companies in the middle are deemed to be largely unaffected by the climate crisis, although it is expected that very few companies will fall into this area. Emphasis is placed on the ‘management’ of risks and opportunities, as if a company is identified as high risk, but has clearly taken significant action to reduce this risk, then the risk is therefore considered to be lower. The same applies with opportunities, as companies that are taking advantage of and clearly identifying their opportunities are positioned to the right of the scale. Key data sources from this assessment include sustainability reports, company annual reports and information collected from the other assessment areas. This assessment acts as a summary of the other impact-focused climate areas, organising the company’s impacts in order to understand whether they are at significant risk or will have strong opportunities as a result of the low carbon transition. This differs from the climate adaptability section, which took a view from the inside-out, aiming to understand how the company’s management qualities might help it benefit or place it at risk from low carbon transition.

Appendix D: Example presentation given to Client 1 on the assessment of Company I.

Company I



Key Findings

- High intensity operational and scope 3 upstream but lower intensity than mining sector average.
- Do not take full responsibility for their **scope 3 downstream emissions** which affects all areas of framework.
- Inadequate action for a company that is responsible for **1% of global emissions**.
- Pledges only cover 5% of their total emissions.
- Positive climate messaging but **history of anti-climate lobbying** which appears to have slowed in 2020/21 but continues to engage with anti-climate trade associations.
- **Irresponsible environmental management** of their mines and the take the view that biodiversity can be 'offset'.
- Has a key role to play in low carbon transition but **currently not well aligned** to fulfill this.
- **Misleading** about the management of their **risks** as a result of **inadequate** attention to scope 3 downstream emissions.

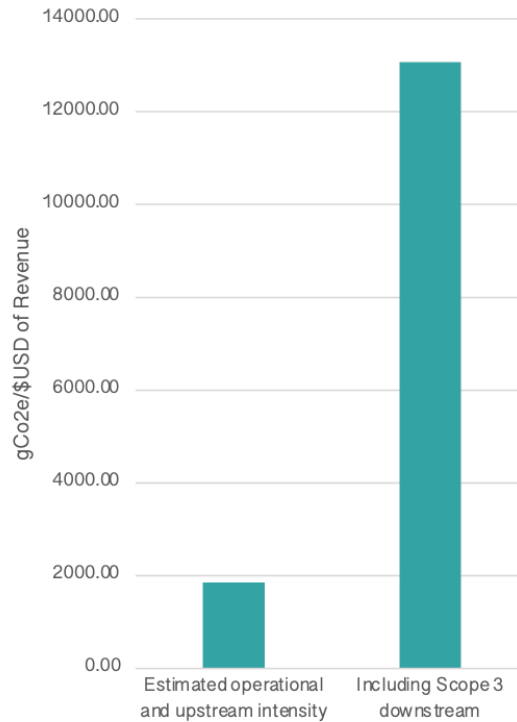
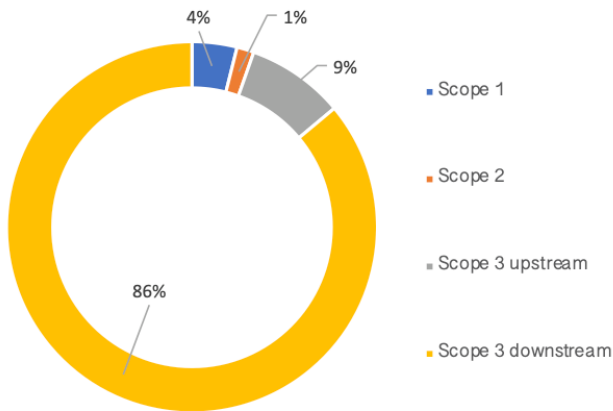
*Yellow colouring indicates we have allocated less resource to this assessment area

Emissions Intensity



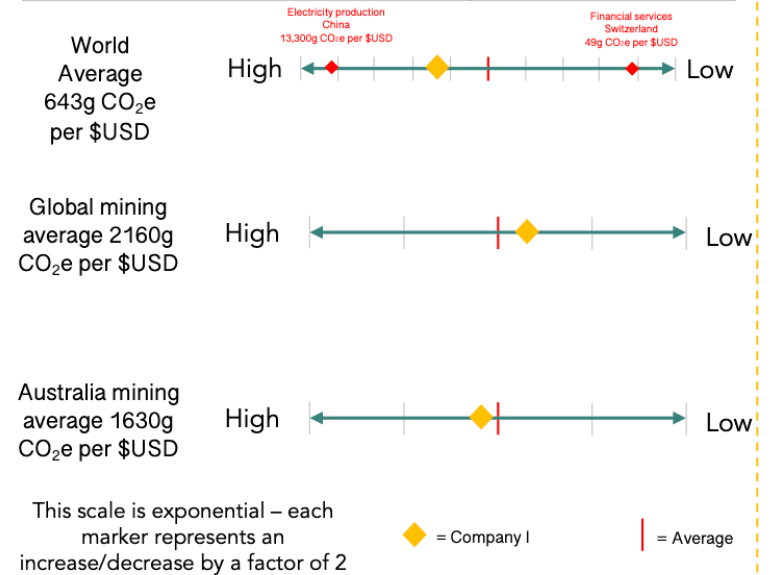
Raw Emissions Data

| Category | SWC Estimate (Mt Co2e) | Company I Estimate (Mt Co2e) |
|--------------------|------------------------|------------------------------|
| Scope 1 | 22.8 | 22.8 |
| Scope 2 | 8.7 | 8.7 |
| Scope 3 upstream | 49.6 | 14.7 |
| Scope 3 downstream | 501.7 | 501.7 |



Emissions Intensity Context

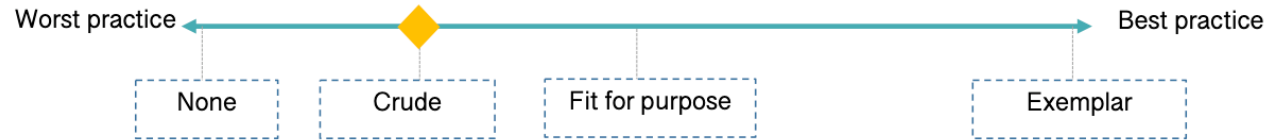
| Category | SWC regional estimate (gCo2e/\$USD) |
|--|-------------------------------------|
| Operational and Upstream Emissions Intensity | 1857 |



Confidence: High



Carbon Accounting Quality



Key Findings

- Scope coverage is **comprehensive** and includes their scope 3 downstream emissions.
- Scope 3 downstream methodology relies on **generic** emissions intensities from IEA. There is no scope for modeling the emissions of their customers within this methodology.
- Scope 3 downstream methodology is **crude** for a company with 87% of their emissions in this footprint category.
- Scope 3 upstream methodology relies on GHG protocol calculator, no information provided on how this was used. The estimate is low in comparison to SWC and MSCI. Relies on outdated emissions intensities that are US centric.

(Scope 1 and 2 methodology is fit for purpose and an improvement on 2019 methods but represents only 5% of emissions)

Possible Next Steps

- Engage with Company I on taking **full responsibility** for their **scope 3 downstream** emissions. We recommend Company I work to receive emissions **disclosure** from their **customers** given the scale of the emissions produced.
- Encourage Company I to **work more closely with customers** to manage customer operational emissions.
- Engage with Company I on their **scope 3 upstream methodology**. Company I should work with suppliers to improve their supply chain emissions disclosure or **work with an experienced carbon audit provider**, rather than using a general calculator.

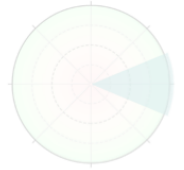
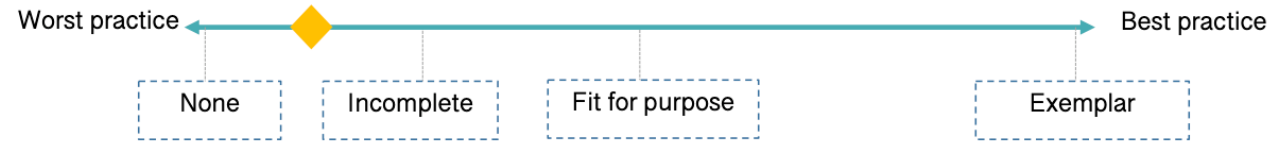
Confidence: High



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Carbon Pledges & Strategy



Key Findings

- Scope 3 downstream targets to reduce steel making emissions intensity by 30% **from** 2030 and 'deliver carbon neutral steel making pathways by 2050' are **unambitious, vague and difficult to find** (see appendix A).
- **Singular scope 3 upstream target** that only focuses on emissions from shipping (net zero by 2050, 40% reduction by 2030) which accounts for a small proportion of total upstream footprint.
- Main pledge only covers **scope 1 and 2 emissions**, around 5% of total emissions and pledge is therefore **severely incomplete**.
- CDP rates Company I's **scope 1 and 2 targets** (15% reduction in absolute emissions and 30% in emissions intensity by 2030 from a 2018 baseline) as **consistent with 2.3°C** of warming. **Scope 3 targets** are ranked as **> 3°C** of warming. **This is not ambitious enough.**
- Around **90% of Company I's climate action spend** is on **operational emissions reductions** when **87% of their emissions** are in **scope 3 downstream**.

Possible Next Steps

- Encourage Company I to set a pledge aiming for net zero by 2050 for its full emissions, including **scope 3 downstream and upstream**.
- Engage with Company I on the **lack of and the misdirection of action** towards operational emissions reductions.
- Question why Company I's scope 3 downstream targets are **not presented clearly** in their sustainability report or discussed at the same time as their scope 1 and 2 pledges.
- Encourage a greater focus on reducing scope 3 downstream emissions (specific discussion in Product Low Carbon Alignment)

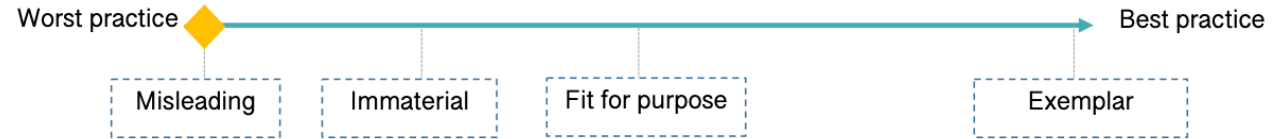
Confidence: High



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Climate Narrative



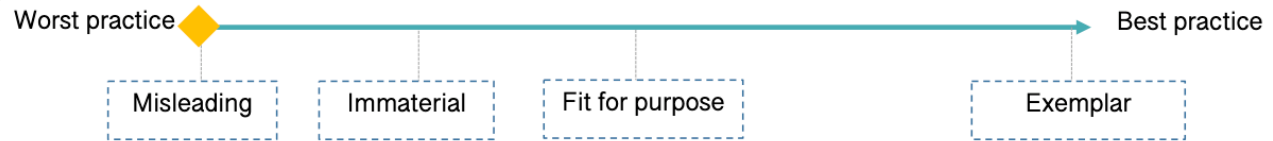
Key Findings

- **Headline statements** on climate change are appropriate.
- **History of lobbying** against GHG regulation and member of several **anti-climate trade associations**. Less engaged in lobbying in 2020/21. Positive reporting on trade association involvement.
- Downstream scope 3 targets are unclear and hard to find (Appendix A).
- **Misleading** about the risks within their portfolio using a framework geared towards companies with majority scope 3 upstream emissions. Framework places their iron ore business as medium risk as it does not consider the scope 3 downstream emissions from steel manufacture (Appendix B).
- The current level of action they are taking is directed in the **wrong place** (operations) with only \$14.5m committed to scope 3 downstream reductions which is only 0.1% of their 2020 profit (~\$15b). This misleads about where their main impact is.
- **Divested from fossil fuels** but sold one major coal mine to an Indonesian mining company with no clear scope 3 targets.

Possible Next Steps

- Encourage Company I to **rethink the risks to their iron ore business**. By not fully acknowledging the risk of their scope 3 emissions they are openly misleading investors.
- Engage Company I on their **scope 3 targets that are vague and non-committal**. Why are they only mentioned once in their sustainability report and concealed in fine detail text?
- Encourage more direct investment from Company I into **low carbon steel and aluminum** smelting solutions as well as investment in further engagement with customers.
- Engage with Company I on **customer selection criteria**. 99% of Company I's iron ore customers use fossil fuel powered blast furnaces (BF); this could be reduced.

Wider Environmental Narrative & Impact



Key Findings

- High level messaging and positions on biodiversity, waste and pollution are positive and apply to entire mine lifetimes.
- Biodiversity is monitored at most Company I sites. However, there is **no evidence** of the quality of monitoring and whether decisions are made as a result of findings.
- Company I's baseline is only compliant with local regulations in the operational areas. Local regulations are often **inadequate**.
- Company I's environmental narrative is undermined by their past **destructive actions** and **ongoing environmental damage**.
- Targets are **non-specific** giving far too much leeway. The stated ambition of "net zero biodiversity impacts" is **conceptually flawed**.
- Strong evidence that Company I use biodiversity offsetting to **distract** from the destruction of important/unique habitats.
- In 2020, out of ~3,000 km² land disturbed, only 16 km² was rehabilitated.

Possible Next Steps

- Challenge Company I's environmental targets. They need to be more specific and more ambitious. The aim should be an **avoidance of environmental disturbance**, not of a "net zero impact".
- Biodiversity offsets should **not be central to their strategy** as in most cases, biodiversity is too complex to 'offset'. It does more harm than good if offsets distract from environmental protection in the first place.
- Encourage Company I to set a baseline environmental performance that is consistent and of a high standard **regardless of local regulations**.
- Company I need to take responsibility for past **historical environmental damage**, and repair that damage even where sites have been sold on.

Social Narrative & Impact

High Negative Impact



Exemplar



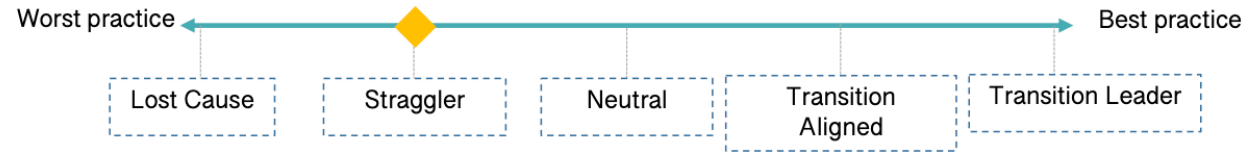
Flagged Issues

- Our primary area of concern is the impact Company I has on **communities local** to their mining operations.

Examples of social issues:

- Pollution from Company I mines which have been sold without proper closure, some of which still causing problems for local communities. For example, [REDACTED] a Company I majority-owned mine for 45 years, divested from in 2016 leaving more than a billion tonnes of harmful waste. The local community are experiencing illness from the pollution and they can no longer access their natural resources and ecosystem services.
- Failure to deal with inadequate storage of toxic waste from an aluminium plant [REDACTED], for over four years.
- High-profile incident of the destruction of [REDACTED]
- There is an ongoing worry about [REDACTED], where Company I and [REDACTED] are planning on mining copper. Company I has been fighting for acquisition of the mine for years, despite constant and fierce opposition from the [REDACTED] for over a decade. What happens to the [REDACTED] could show whether Company I have made positive changes in their management of sacred sites [REDACTED].
- Operations at the [REDACTED] have caused issues around human rights and damage to the environment. A major concern is the environmentally destructive riverine tailings disposal method used at this mine.

Product Low Carbon Alignment



Key Findings

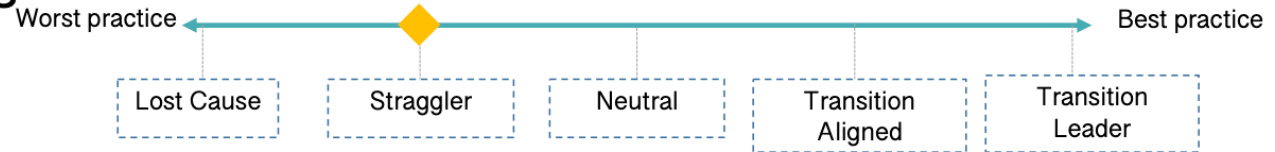
Iron Ore

- Iron ore accounts for 58% of Company I's current revenue, but peer-reviewed studies show **links between low-carbon transition and decreases in iron ore demand**.
 - One of the assessments shows that if China increases secondary steel production share from current ~14% to 36% by 2030, iron ore demand would fall by 5-15% across most exporting countries (Nechifor et al., 2020).
 - The world is expected to transition to 50-75% of secondary steel use by 2050 in line with Paris targets (Bataille et al., 2018); current global secondary steel uptake is around 25% (most of the existing EAF capacity)
- **Low-grade iron ores**, part of Company I's portfolio, can only be used in BF production and are not aligned with transition. **Low carbon steel production technologies** such as hydrogen+EAF, and **iron ore market squeeze** from increased recycling, both put selective pressures on **high-grade iron ores**.

Other Products

- Company I's **copper assets & hydro-based aluminium smelters** are well-aligned with transition, although these account for **only 22%** of current revenues.
- Material substitutions through technological advances (carbon fibers, composites, bioproducts, etc) also pose risks to primary steel and aluminium demand in certain sectors.
- Company I's current **recycling initiatives** are focused on aluminium and appear inadequately small given circular economy transition that underpins 1.5C and 2C pathways (e.g. 30 kton recycled by ██████████ makes up only 0.3% of the equivalent new aluminium produced by Company I, including bauxite).
- These alignments and mis-alignments will be stronger under **1.5C pathways** (e.g. IEA's new NZE2050 scenario) compared to **2C pathways**.

Management of Risks and Opportunities



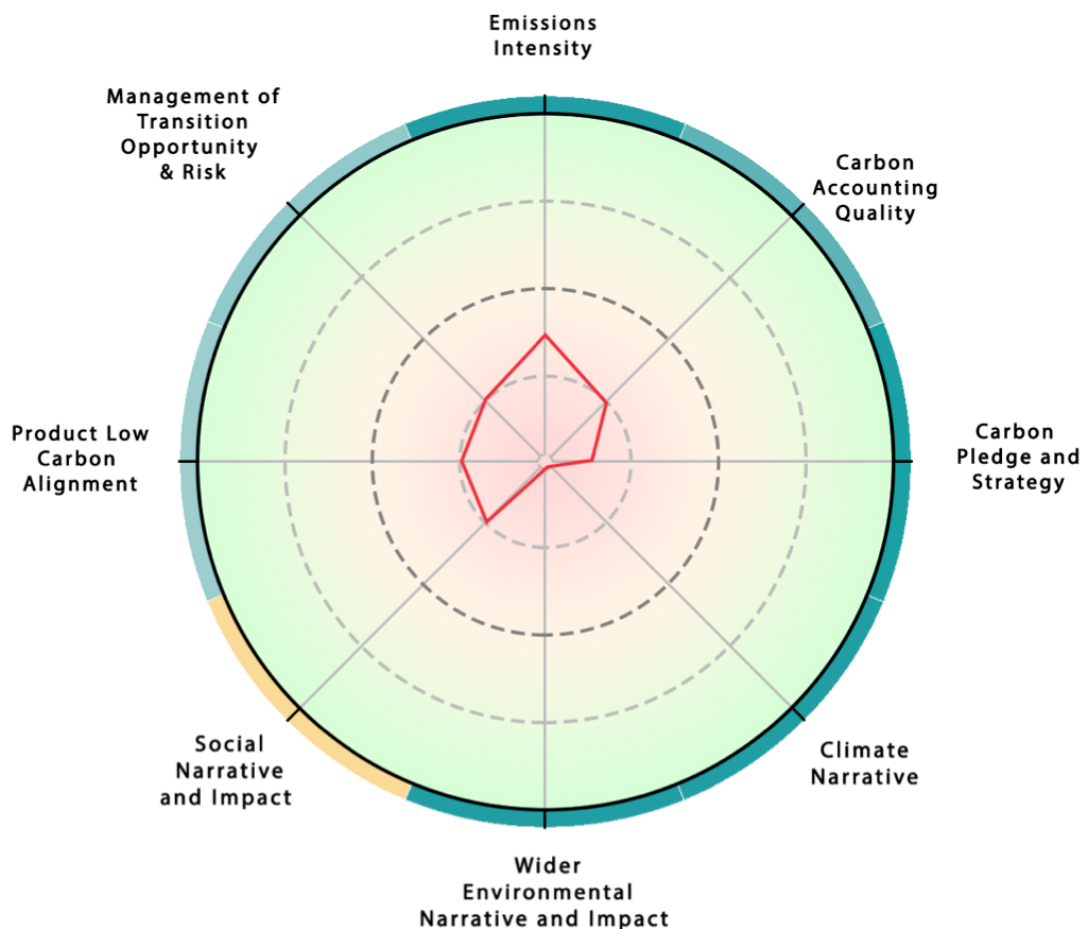
Key Findings

- Company I considered 3 scenarios out to 2050, of which [REDACTED] is the only one aligned with the <2C Paris target, although it falls well short of 1.5C.
- **Aluminium, copper & battery minerals** will grow under Society 3.0, but **iron ore** (58% of Company I's revenue) will decline as scrap recycling increases (Appendix D).
- **93% of Company I's growth apex** is targeting "all copper assets" & "hydro-based aluminium smelters" (22% of Company I's current revenue).
- As part of Company I's [REDACTED]
- Several of Company I's projects are looking at **improving aluminium recycling** and **introducing alloys**, although their scale (where stated) is comparatively small.
- For **iron ore**, current partnerships with [REDACTED] are **aimed primarily at improving BF technology** in the near to medium term.

Possible Next Steps

- Company I need to go **beyond simply monitoring** the emerging 1.5C pathways by fully acknowledging the very large scale and pace of change that are necessary to meet this target. This will likely lead to **considerable re-alignment** of their current portfolio, which is set to perform the best under Company I's medium scenario (2-3C warming).
- Large investments in **secondary steel production** and other forms of **recycling** could provide considerable transition opportunities.
- Company I currently appear to see secondary steel production as a threat to their business model when they could be investing in this as an opportunity.
- Company I need to direct much larger investment towards **low-carbon steel technologies** such as hydrogen+EAF. Their [REDACTED] to explore hydrogen is at an MoU stage.
- Scaling up mining of **battery metals** is another viable pathway, provided it is carried out to the most ambitious environmental and social standards.

Company I



Key Possible Next Steps

Scope 3 Downstream:

- Strongly advise Company I to start properly measuring, managing and taking full responsibility for their scope 3 downstream emissions.
- Encourage Company I to rethink their approach to downstream scope 3 and direct most of their action and investment towards the emissions in this area of their value chain.

Impact on Biodiversity:

- Encourage Company I to hold itself to higher standards regarding its environmental performance.
- Challenge Company I's management of their mines post closure as well as the use of biodiversity offsetting.
- Encourage Company I to set specific and ambitious targets for limiting their impact on biodiversity.

Misleading Climate Narrative:

- Expose the serious flaws in Company I's climate narrative and the misleading way they frame the risk of their portfolio.
- Advise that Company I's narrative focus on operational emissions is outdated and inadequate. Company I should focus on scope 3 downstream action.

Un-Ambitions and Incomplete. Pledges

- Challenge Company I's net zero pledge and reduction targets.
- Challenge Company I's scope 3 targets and question why they are so difficult to find.