How do climate change strategy disclosure and investment horizon

jointly influence investor judgments?

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November 2023

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Disclosure demands from investors have led companies to increasingly disclose their climate change strategies, which may vary in framing features. Strategy variations include emphasizing the desirability (rationale for climate change goals) or feasibility (means to achieve these goals) features. We experimentally examine whether and how these framing features and the investment horizon jointly affect investors' judgments. Drawing on construal level theory, we find that short-term investors are significantly more willing to invest when a company's disclosures emphasize feasibility over desirability features. In contrast, long-term investors exhibit no significant difference in willingness to invest, regardless of the framing features in these disclosures. We find that feelings of fluency in processing the information drive the effect of feasibility features on short-term investors' willingness to invest. This feeling, in turn, enhances perceived management communicative competence, increasing short-term investors' willingness to invest. We also conduct supplementary experiments to rule out the influence of the firm's operating performance and the positivity of the news between the framing features on these results. The findings contribute to the understanding that the framing features in a climate change strategy disclosure are material to investors' decision-making, which has implications for regulators and companies.

Keywords: construal level theory; climate change strategy; communicative competence; investment horizon; investor judgment

1. Introduction

Investors are putting pressure on companies to report their climate change strategy because they believe it will materially affect business operations and thus investment decisions (Deloitte, 2020; EY, 2019; Ilhan et al., 2023; Krueger et al., 2020).[1] While companies are increasingly reporting emission reduction goals (e.g., less than 50% in 2017 to two-thirds of S&P 500 companies in 2020) (Eaglesham, 2021), a 2021 survey of large companies by Boston Consulting Group (BCG) found that only 11% had met these goals in the last five years (BCG, 2021). These survey findings suggest a disconnect between the desire of companies to embrace climate change strategies and their ability to achieve those goals. Understandably, in taking stock of prevailing disclosure practices, regulators comment when a corporate climate change disclosure will be less beneficial for users (Financial Reporting Council [FRC], 2020, 2022; Securities and Exchange Commission [SEC], 2022). For example, the SEC have expressed their concern that companies do not provide their investors with sufficient information to understand how they intend to achieve the climate change goals (SEC, 2022).[2] Thus, current climate change disclosures appear to vary in their framing features or level of emphasis on the 'why' versus the 'how'.

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[1] Climate change strategy refers to companies' activities toward reducing greenhouse gas emissions (Task Force on Climate-related Financial Disclosures [TCFD], 2017). Relatedly, Environmental, Social, and Governance (ESG) refers to how companies and investors integrate environmental, social, and governance concerns into their business models (Gillan et al., 2021; International Finance Corporation, 2004). The two differ in that ESG includes social and corporate governance explicitly, and a climate change strategy includes these indirectly as they relate to environmental considerations. We focus specifically on a climate change strategy disclosure setting, whereby a climate change strategy disclosure primarily comprises the company's environmental goals and the efforts to achieve these goals (Financial Reporting Council [FRC], 2020; TCFD, 2017, 2020). Examples of these disclosures are provided in the online Appendix 1.

[2] The FRC (2020) reports in its headline findings, 'Some companies have set strategic goals such as "net zero", but it is unclear from their reporting how progress towards these goals will be achieved, monitored or assured.' Similarly, the International Sustainability Standards Board (ISSB)'s (2023) standards on IFRS S2 climate-related disclosures and European Financial Reporting Advisory Group (EFRAG) (2022) in draft European Sustainability Reporting Standards (ESRS) E1 climate change stipulate that companies are required to provide information about their emission reduction targets together with how they plan to achieve any climate-related targets that they have set.

A lack of emphasis on feasibility information may cause investors to become skeptical about the company's (desired) goal on climate change because they may be concerned about the execution and achievement of its climate change goals (FRC, 2019; SEC, 2022).[3] To shed light on this issue, we examine whether and how the climate change disclosure framing features (emphasizing desirability versus feasibility features) influence investors' willingness to invest.

Against this backdrop, particularly pertinent is the critical concern that investors' short-termism mainly underlies why management is less committed to climate change strategies (World Economic Forum [WEF], 2017, 2019). As the United Nations Global Compact [UNGC] (2017) states, since managers committing to a climate change discourse mainly encompass 'act (ing) for the long term in a short-term world', 'short-termism in investment markets is a major obstacle to companies embedding sustainability in their strategic planning and capital investment decisions'. As such, it is imperative to address this prevalent problem where the perception of short-termism in the market leads managers to myopically adopt a short-term focus in their investment, which can hinder their engagement in long-term value-enhancing climate change projects.[4] Specifically, this leads us to examine whether and how investment horizon and managers' emphasis on certain framing features jointly affect investment decisions.

The International Sustainability Standards Board (ISSB) (2023) in IFRS S2, and the

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[3] Erkki Liikanen, the chair of the International Financial Reporting Standards Foundation's Board of Trustees, told the COP26 audience that 'Its standards will help investors understand how companies are responding to ESG issues, like climate, to inform capital allocation decisions.' (Crabb, 2021). Jeffrey Hales, the Chair of the Sustainability Accounting Standards Board, emphasized that 'As we embark on 2022, I am heartened by the significant shift in the conversation. It's no longer about why we need to engage in sustainability issues, it's about how.' (Hales, 2022).

[4] The importance and the consequent push to foster long-termism in the market reflect regulators' concerns of a drastic decrease in the average holding period of investors (MSF, 2019) and the need for managers to be able to resist pressure from short-term investors in engaging with climate change initiative that generates long-term values (McKinsey Global Institute, 2017; UNGC, 2017). This is highlighted in European Commission action plan on sustainable finance whereby fostering transparency and long-termism is one of its three key areas while strengthening sustainability disclosure and attenuating short termism in capital market are its key actions (European Commission, 2018).

European Financial Reporting Advisory Group (EFRAG) (2022) in draft European Sustainability Reporting Standards (ESRS) E1 climate change, have recently required companies to specify the time horizon (short, medium or long-term) effects of climate-related risk and opportunity. This approach aligns with and facilitates investors with different horizons to better understand and interpret climate-related disclosures by companies' management. Moreover, a survey conducted by PricewaterhouseCoopers (PwC) (2021) on 325 investors showed that disclosures about companies' commitments and actions on ESG issues, such as climate change, are material to investors when they make investment decisions. However, many investors raised significant reservations about the quality of such information being made available to them and the need for better reporting by managers for understandability (PwC, 2021).[5] Taken together, not only is investors' processing fluency of the disclosure important, but also, management competence in communicating such disclosures is vital, both of which we consider in this study.

We expect that the investment horizon moderates the effectiveness of a climate change strategy disclosure on investors' willingness to invest, according to construal level theory (CLT). Specifically, investors with different investment horizons would hold either a distal or proximal temporal perspective that promotes the adoption of a higher- or lower-level construal mindset, leading to a shift in their behavioral focus (Fujita et al., 2008; Liberman et al., 2002; Liberman & Trope, 1998; Liu et al., 2020). CLT posits that desirability features (reflecting the superordinate 'why' aspect of an action) and feasibility features (reflecting the subordinate 'how' aspect of an action) represent high-level and low-level construal features, respectively (Fujita et al., 2008; Liberman & Trope, 1998; Vallacher & Wegner, 1989). We expect that a climate change

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[5] On average, approximately one-third of these investors perceived the quality of ESG reporting as sufficient. Most investors, however, questioned existing ESG reporting or information in terms of relevance, reliability, timeliness, completeness and comparability for effective decision-making. One participant further elaborates, 'That is why trust is so critical. More is required for investors before they pull the trigger and invest money.' (PwC, 2021, p. 5).

disclosure that emphasizes feasibility rather than desirability features is more likely to be influential and persuasive for short-term investors than long-term investors in their decision-making process. That is, feasibility features lead to short-term investors feeling greater processing fluency and consequently perceiving the management as having higher communicative competence. This increases their willingness to invest in the company (Kim et al., 2009; Lee et al., 2009). Based on the construal fit effect between the temporal mindset and the emphasis on high-/low-level features in the message, we predict that a climate change strategy disclosure emphasizing feasibility features, rather than a disclosure emphasizing desirability features, will have a greater positive effect on investors' willingness to invest when the investment horizon is short than when it is long.

In conducting a $2 \times 2 + 2$ between-participants experiment, we manipulate the climate change strategy disclosure as management's emphasis on desirability features or feasibility features and the investment horizon as short or long. In both investment horizon conditions, we include an additional control condition in which the firm does not emphasize these features. We find that managers emphasizing the feasibility features significantly increase short-term investors' willingness to invest. In contrast, we find no significant difference in long-term investors' willingness to invest, regardless of the type of framing features. We also find that a short-term investment emphasizing feasibility features in a climate change strategy disclosure causes investors to experience feelings of processing fluency. This experience of fluency, in turn, increases their perception that the management is competent in communicating a climate change strategy and, ultimately, increases their willingness to invest.

Our study contributes to both the literature and practice in several ways. First, it contributes to the corporate social responsibility (CSR)/ESG reporting literature. Our findings

complement the emerging literature that examines the effects of different styles and contents of CSR reporting on investors' judgments (e.g., Elliott et al., 2017; Johnson et al., 2020). Our study differs from these prior studies as we examine another important factor that can influence investors' reactions to the disclosure of corporate carbon emission strategies—the framing features in this disclosure that emphasize either desirability or feasibility features—both of which are prevalent in practice and managers have discretion as to which to emphasize. Since they draw investors' attention either by highlighting the *why* or *how* aspects of climate change action and as both are highly relevant to current climate change policy-making, our findings contribute to an understanding of the implications of these framing choices. Moreover, our study differentiates from the previous stream of research on the effects of varying the *content* disclosed (Elliott et al., 2017; Johnson et al., 2020), but we show that it is the *emphasis* on specific aspects of the disclosed content that can matter in the climate change setting. Specifically, our findings show simply highlighting certain aspects of the climate change disclosure through management communications may represent a simple yet effective intervention in influencing certain investment behaviors (e.g., emphasizing feasibility over desirability features increases short-term investors' willingness to invest).

Second, our findings further add to this stream of research by incorporating the investment horizon, which can lead to different temporal perspectives in investigating how individual investors process climate change strategy information. Our findings have important implications for practice, as while perceived investors' short-termism poses a longstanding threat hindering managers' efforts to commit to long-term value-creating climate change propositions, our findings show that this can be addressed if managers emphasize the feasibility features in their climate change disclosure. Given that short-term investors tend to adopt a more concrete

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construal when assessing short-term investment returns, our research suggests by bringing to the fore *how* companies will realize and use resources to achieve the climate change goal, this likely counters the effects of investors' short-termism and is compatible with managers investing for the long-term values.

Finally, we contribute to the CLT literature by providing evidence, through a serial mediation, of a cascading effect of a construal fit between individuals' construal levels and framing features, which promotes their feelings of processing fluency and, in turn, enhances their perception of a disclosure preparer's communicative competence. These serial mediation findings have key implications, especially for regulators, practitioners and managers interested in understanding how investors are influenced by the *way* as opposed to the *content* of the information communicated in climate change disclosures. This is especially important given when proposing climate change disclosure standards, regulators strive to balance key considerations to enhance investors' decision-making, such as content, length, and processing fluency (SEC, 2022).

2. Theory and hypothesis development

2.1. Background and regulatory environment

Regulators and standard-setters have proposed requirements for climate change strategy disclosure. One such requirement is that firms must provide detailed information about their strategy to address their exposure to climate-related risks (European Commission, 2023; EFRAG, 2022; Financial Conduct Authority, 2020; ISSB, 2023; SEC, 2022). Despite companies setting strategic goals in response to climate change issues (KPMG, 2020; World Wildlife Fund, 2021) and increasing their climate change strategy disclosures (TCFD, 2021), the types of information they tend to emphasize vary and may not meet the expectations of regulators or

international reporting initiatives (EY, 2019; FRC, 2019, 2020, 2022; SEC, 2022).[6] For instance, recent public inputs on climate change disclosures hold that while companies set carbon emission goals and explain *why* they are important, it is often unclear from their disclosure *how* they intend to meet them (SEC, 2022). Specifically, the Investor Group on Climate Change (2021) and ClientEarth (2021) also raise similar concerns about a lack of emphasis on feasibility features in climate change disclosures.[7] These sentiments suggest that while companies clearly articulate why their climate change goals are important, they may neglect, or inadequately outline plans to achieve those goals (Investor Group on Climate Change, 2021; Roddan, 2021). In line with this view, the SEC (2022) through their recent proposed climate change disclosures, and ISSB (2023) and EFRAG (2022) through their climate change standards, require companies with any climate-related goals to also provide disclosures about their carbon reduction strategies or net-zero roadmaps to demonstrate their progress toward reaching their goals. The EFRAG's rules, ISSB's rules and SEC's proposed rules further require a company to discuss how it intends to meet its climate-related targets or goals (EFRAG, 2022; ISSB, 2023; SEC, 2022).[8]

Consequently, a company may opt to frame its climate change strategy disclosure by emphasizing desirability features to highlight why it should ideally adopt the goal, thereby potentially justifying the importance of engaging in climate-related activities; in contrast, it may opt to frame the disclosure by emphasizing feasibility features to identify how it can achieve its goal, thus potentially explaining how it will realize the goal. Therefore, we investigate how

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[6] In 2020, more than two-thirds of the world's 250 largest firms regularly set targets in their effort to reduce CO_2 emission (KPMG, 2020); 60% of Fortune 500 firms in 2021 compared to 48% in 2017, set climate-related commitments to reduce carbon emissions (World Wildlife Fund, 2021).

[7] ClientEarth (2021) highlights that despite almost half of the 250 largest UK listed companies indicate their commitment to address climate change by setting the goal of meeting global CO_2 emissions targets, detailed information about how they aim to achieve this target is generally lacking.

[8] The first set of ESRS adopted by the European Commissions on 31 July 2023 further specifies the requirement for companies to disclose their climate change mitigation and adaptation actions and the resources allocated for their implementation to achieve climate-related policy objectives and targets (EFRAG, 2022).

framing that emphasizes desirability versus feasibility features and investors' horizons can interact to influence their judgment.

2.2. Effects of climate change strategy disclosures on investors

A substantial body of research demonstrates disclosure features in communication can differentially influence how individuals construe events or situations, which affects their subsequent judgment (Backof et al., 2016; Elliott et al., 2017). In our context, we expect that companies' framing of climate change strategy to emphasize desirability features or feasibility features will lead investors to adopt either a high-level or low-level construal focus when evaluating that strategy.

CLT asserts that individuals subjectively assess relationships in terms of how distanced events or situations are from their direct experiences and how these assessments affect their construal level (Trope & Liberman, 2010). Accordingly, we expect that the emphasis on desirability (feasibility) features will lead investors to construe at an abstract (concrete) level.

Following Liberman and Trope (1998), we first highlight that the main distinction in our setting between framing that emphasizes desirability features versus framing that emphasizes feasibility features corresponds to whether a greater emphasis is on the ends versus the means. Specifically, when a company emphasizes the desirability features, it is focused on the valence of the end states of an action in terms of the superordinate 'why' aspects of the action (Trope & Liberman, 2003; Vallacher & Wegner, 1987). When it emphasizes the desirability features in its climate change disclosure, it is concerned with why it is engaged in the climate change initiative (e.g., the company needs to reduce carbon emissions by 90% in six years to stay competitive while also addressing the global warming problem). Conversely, when a company emphasizes the feasibility features, it is concerned with the ease or difficulty of reaching the end states

regarding an action's subordinate 'how' aspects. That is, when it emphasizes the feasibility features in its climate change disclosure, it highlights its efforts and activities in terms of how it will implement a climate change initiative (e.g., it will achieve carbon emission reduction by 90% in six years through progressively introducing new renewable energy while developing a low-carbon technology in its plant).[9]

CLT (e.g., Trope & Liberman, 2003) asserts that desirability features constitute a high-level representation of actions, given that they convey more effectively the central meaning underlying an action (Fujita et al., 2008; Vallacher & Wegner, 1987), whereas feasibility features constitute a low-level representation of actions. Thus, we expect an emphasis on desirability (feasibility) features will encourage investors to engage in relatively more abstract (concrete) thinking. Conversely, when they consider the desirability features of why an action is being performed, they tend to focus on the central and general meaning of the action, which leads to their formation of a more abstract construal. Thus, we expect that companies' framing of climate change strategy in terms of emphasizing desirability (feasibility) features, when aligned with investors' temporal perspectives (e.g., a proximal- versus a distal future view) of their investment horizons, can lead to either a construal fit or a non-fit, which differentially influences investors' evaluations and decisions.

2.3. Investment horizon

Recent research in the context of sustainable investment demonstrates that investors' investment

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[9] The desirability features and feasibility features are both commonly emphasized in climate change disclosures in practice, but often, companies choose to prominently emphasize one more than the other. One example of the emphasis on desirability features is in the Microsoft (2020) *Environmental Sustainability Report 2020*, which highlights that being carbon negative by 2050 is crucial for minimizing the climate change impact of its business operations and helping the world solve the climate change issue (p. 4). One example of the emphasis on feasibility features is in the Toyota (2020) *Sustainability Report 2020*, which emphasizes its strategies to achieve net-zero operational emissions by 2050, namely, investing in innovative technology and promoting the introduction of renewable energy, such as by developing low-carbon technology for its manufacturing activities and constructing wind power generators (p. 21).

horizon influences their evaluations and decisions to invest in companies with strong ESG and climate responsibility profiles (Christensen et al., 2021). For instance, Starks et al. (2017) show that long-term, but not short-term, investors prefer investing more in companies with a strong ESG profile. Meanwhile, Gibson et al. (2020) find that long-term investors invest more in companies with better sustainability footprints. These findings collectively suggest that long-term investors perceive companies with strong ESG profiles as better able to create financial value over time (Eccles et al., 2014; Humphrey et al., 2012; Ramelli et al., 2021).

Research also shows that short-term investors value ESG disclosures under certain circumstances. For example, Yang et al. (2023) show that short-term rather than long-term institutional investors react more positively to green finance policies encouraging green transformation through green innovation. Holm and Rikhardsson (2008) experimentally demonstrate that positive environmental information affects experienced investors' decision-making when they make short-term rather than long-term investments. Thus, given the mixed findings, and the fact that the investment horizon is a vital consideration in the context of climate change disclosures, we predict how the investment horizon can interact with framing features to influence investors' investment judgment.

The effect of temporal distance on how individuals construe certain events or situations varies not only with their actual temporal distance but also with their subjective temporal perspective of an event or situation (Fujita et al., 2008; Kivetz & Tyler, 2007; Liu et al., 2020; Rogers & Bazerman, 2008; Weisner, 2015). CLT asserts that psychological distance, a multidimensional construct that describes people's subjective assessment of their relationship in terms of how removed they are from the 'here and now', can also influence the level at which they construe mental representations (Liberman et al., 2007; Trope & Liberman, 2003).

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Therefore, we focus on investors' temporal distance, or more specifically, their temporal perspective, whereby we expect that investors with a short (long) term investment horizon consider their investment in terms of returns to be realized in the proximate (distant) future. In particular, when they adopt a proximal future (distal future) temporal perspective, they construe at a concrete (abstract) level.

2.4. Fit between framing features and investment horizon

According to CLT, construal fit occurs when there is a match between an individual's mental construal level and the construal level features contained in the message (Fujita et al., 2008; Lee et al., 2009; Liberman & Trope, 1998; Trope et al., 2007). Specifically, decision-makers with a high-level construal mindset are more influenced by high-level features than by low-level features, and vice versa for those with a low-level construal mindset. If there is a construal fit, the information tends to be preferentially attended to and becomes more persuasive and influential for an individual's evaluation and processing behavior.

CLT indicates that people's perception of psychological distance (e.g., their subjective temporal perspective from their investment horizon) influences the extent to which they adopt a relatively low- or high-level construal mindset, thus affecting the weight they place on high-level features versus low-level features in a message when evaluating the information it conveys (Henderson et al., 2006). As mentioned earlier, we highlight that desirability (feasibility) features are more focused on the superordinate *why* (subordinate *how*) aspect of an action, thus constituting a high- (low-) level representation of actions. Therefore, we expect a construal fit or misfit to occur when individuals' construal level either aligns with or does not align with the level of abstractness of climate change disclosures.

On this basis, we expect short-term investors, who have a proximal temporal perspective

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as they consider investment returns realized in the near future, to form a concrete, low-level construal mindset. Accordingly, they are more likely to react to the contextualized details and the peripheral, subordinate aspect of a situation. When assessing the appropriateness of a corporate climate change strategy disclosure, they are more likely to be critical of the lower-level feasibility features regarding *how* the company performs actions (i.e., how the company meets its goals on net-zero CO_2 emissions), which match their construal. In contrast, if a company focuses its communication solely on desirability features (i.e., why meeting the goals on net-zero CO_2 emissions is important) but does not specify how these goals are to be achieved, short-term investors may find it difficult to assess its commitment to meet its goals and may perceive the message as incompatible with their construal. Moreover, because they adopt a more proximate temporal perspective, short-term investors exhibit greater uncertainty aversion when assessing information (Liu et al., 2020; White, 2017), and thus, we expect them to show a stronger reaction to a low-level feature. Together, we posit that short-term investors who construe at a concrete level will react positively to feasibility features, which promote a construal fit that enhances the effectiveness of the message.

In comparison, we posit long-term investors with a distal temporal perspective will adopt a high-level construal and consider the general meaning of an action while retaining the end-related, central aspects of the information as necessary to them. They are less likely to be concerned by the unique contextualized aspects of information being represented. According to Choi et al. (2016), this broadens the scope of the items construed (p. 1092), which leads us to posit that an abstract representation construed will attenuate the cognitive fit effect despite a match or mismatch of the framing features and the construal formed.

Importantly, CLT posits that people construing at an abstract high level tend to over-

generalize based on the information provided (Liberman & Trope, 1998) because of the cognitive process of abstraction (Weisner, 2015).[10] Thus, they are less likely to react differently when the matching high-level features or the mismatching low-level information is emphasized (Liu et al., 2020; White, 2017). Accordingly, long-term investors are likely to over-generalize from the information provided in the climate change strategy disclosures, which, in turn, dampens the cognitive fit effects associated with receiving matching information that emphasizes desirability features (i.e., the valence of the end state in terms of net-zero CO_2 emission) or mismatching information that highlights feasibility features (i.e., the means of achieving net-zero CO_2 emission).[11] Specifically, under an abstract construal, long-term investors extract the gist or the general meanings of an action. We posit that the positive cognitive fit effects from emphasizing desirability features over feasibility features will be attenuated when long-term investors construe at an abstract level.

Together, we predict that short-term investors who construe at a concrete level will react positively to feasibility features, but this construal fit effect reduces for long-term investors. We illustrate our theoretical predictions in Figure 1 and state our first hypothesis as follows:

HYPOTHESIS 1. Investors holding a short investment horizon are more willing to invest when feasibility features rather than desirability features are emphasized in climate change disclosures, but this construal fit effect reduces when investors hold a long investment horizon.

[Insert Figure 1 here]

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[10] The cognitive process of abstraction is the process of extracting the central meaning of a given information set and peeling away the peripheral aspects of that information (Weisner, 2015). This process can be affected by an increase in the individual's temporal distance. This means that individuals will be removed from a direct experience when they think of a more distant event.

[11] However, the above prediction is not without tension as decision makers with a high-level construal mindset are more likely to be influenced by the arguments emphasizing desirability features rather than emphasizing feasibility features (Fujita et al., 2008). A fit may occur when climate change disclosure emphasizing the desirability features (high-level features) is conveyed to long-term investors construing at an abstract, high-level. Relying on the effect of a construal fit, as long-term investors are expected to adopt a high-level construal mindset, a disclosure emphasizing desirability features (a high-level feature) is expected to be more relevant and influential for their investment decisions.

2.5. Processing fluency and perceived communicative competence

As the SEC (2022) asserts, one of the key emphases in improving climate-related disclosure is to make it *easier* for investors to process this information. Improving investors' information-processing efficiency can yield certain benefits such that they are better able to incorporate climate-related information into their decisions (SEC, 2022). As such, processing fluency, which refers to the subjective feeling about the ease with which information can be processed (Rennekamp, 2012), is important in shaping the extent investors rely on climate-related information. In particular, higher processing fluency helps companies to connect with investors, which in turn leads them to perceive greater management communicative competence. Given the discretionary nature of climate-related disclosures and that they are now at the early formative stage for uniform reporting frameworks (e.g., EFRAG, 2022; ISSB, 2023), it is important for the disclosures to not come across as contrived and self-serving (Rennekamp & Witz, 2021) and to counter suggestions of greenwashing (Mateo-Márquez et al., 2022). As such, when investors consider managers to have high levels of communicative competence, they are more likely to rely on and incorporate their climate-related disclosures when making investment decisions.

CLT asserts that people's engagement increases when there is a fit between the message frame and their construal level mindset (Lee et al., 2009; Lee & Aaker, 2004). When there is a fit, people experience increased subjective feelings of processing fluency, which leads to a more favorable attitude and positive affects (Shah & Oppenheimer 2007; Reber et al., 2004). On this basis, we predict that a construal fit between investors' construal level mindset from their investment horizon and the framing features emphasized in the climate-related disclosure will increase their feeling of processing fluency.

Furthermore, this feeling of processing fluency elicits positive affect (Rennekamp, 2012;

<div align="center">15</div>

Shah & Oppenheimer, 2007), and this affective feeling serves as a subconscious cue that both the managers and the information they communicate can be relied upon (Elliott et al., 2017). Given the wide variations in how climate-related information are disclosed in practice (TCFD, 2020, 2022) and concern over investors' lack of understanding of climate-related issues (Ilhan et al., 2023; SEC, 2022), investors provided with fluent disclosures will likely associate this 'feels right' to that of the 'messenger' being the managers, and specifically their communicative competence in their climate-related disclosures (Rennekamp & Witz, 2021). This aligns with research which shows when investors experience processing disfluency, or they feel processing the management disclosures to be difficult, they are not likely to attribute this difficulty to their lack of knowledge; but rather, the disfluency as arising from the incompetence of managers in how they convey their message (Tan et al., 2019). To the extent that climate-related disclosure is less standardized and with less guidance on its contents (SEC, 2022; Siew, 2015; TCFD, 2022), investors who perceive higher management communicative competence are more likely to rely on, and place greater weight on, the climate-related information these managers present (Koonce et al., 2023); thus, increasing their willingness to invest in the company.

Therefore, under the construal fit effect and our predicted interaction effect between framing features and the investment horizon, we predict that when a company emphasizes feasibility features rather than desirability features, short-term investors experience increased feelings of processing fluency, leading them to perceive that the management has greater communicative competence, which, in turn, increases these investors' willingness to invest in the company. Accordingly, we propose our second hypothesis as follows:

> HYPOTHESIS 2. Investors' feeling of processing fluency and perceived management communicative competence sequentially mediate the interaction effects between the framing features and the investors' investment horizon on their willingness to invest.

3. Research method

3.1. Participants

We recruited 332 nonprofessional investors from Prolific.[12] We limited the subject pool to American adults with investment experience and a prior approval rating of at least 95%. Each received £1.88 (US$2.50) as compensation for participating in this experiment. Among them, 55.1% were female, 65.4% were under 35–44 years old, and 81.3% held an undergraduate or higher degree. On average, they had 5.76 years of investment experience and 12.3 years of working experience and had taken 1.88 accounting units and 2.11 finance units.[13] Our statistical inferences remained unchanged when we included participant demographics in our hypothesis testing analyses as covariates.

3.2. Experimental design

A 2 × 2 + 2 between-subjects design was used to test the hypotheses. The framing features of a corporate climate change strategy disclosure were manipulated as indicating an emphasis on either desirability or feasibility features. We manipulated the investment horizon at two levels, short- and long-term. In both the horizon conditions, we also included a control condition in which the company does not include a message from manager emphasizing the desirability features or feasibility features.[14]

3.2.1. Manipulation of feature framing

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[12] Other accounting studies have recruited online participants from Prolific (Barcellos & Kadous, 2022; Luo & Salterio, 2022; Hoang & Phang, 2023).

[13] The Institutional Review Board at the authors' institution approved the experimental studies presented in this paper.

[14] As the CEO can only either emphasize the desirability or the feasibility features in their message, our control conditions do not include such messages. Specifically, we follow Fujita et al. (2008), in that as all participants receive information already containing both desirability and feasibility features, we do not include a message to emphasize either the feasibility or desirability features. This design choice is also important as it precludes any possibilities that feasibility or desirability features are emphasized.

Our manipulation of feature framing followed Fujita et al. (2008).[15] In all conditions, we presented participants with two desirability features and two feasibility features endorsing corporate climate change goals and strategies. We then manipulated the framing features by varying whether a CEO's message emphasized the desirability or the feasibility features. This manipulation represents a real-world climate change strategy disclosure because companies commonly disclose both types of features but tend to emphasize one type over the other.

Under the emphasis on desirability features condition, we presented participants with a CEO's message emphasizing desirability features.[16] It had the headline, 'Why we are striving for net-zero CO_2 emissions?'[17] In the message, the CEO emphasized the company's goals of achieving net-zero CO_2 emissions. We also provided a figure that emphasizes the firm's end goal of net-zero emission.[18] Under the emphasis on feasibility features condition, we provided participants with a CEO's message with the headline, 'How we are striving toward net-zero CO_2 emissions?' In the message, the CEO emphasized the company's actions as a means to achieve its climate change goals. Similar to the desirability manipulation, we provided a figure but emphasized the extent to which the company's concrete actions could reduce CO_2 emissions to

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[15] Following Fujita et al. (2008), we focused on the positive desirability and feasibility features of messages.

[16] A goal-driven corporate responsibility strategy reflects a company's highest priority if the strategy is communicated by the CEO (Upshaw, 2021). Therefore, the CEO's message can help a company to avoid stakeholders' critique that it is 'greenwashing' its climate change goals. Further, in real-world climate-related disclosures, many companies acknowledge their commitment to net-zero carbon emissions in the CEO's statements (FRC, 2020). For example, Ford's CEO, in their Sustainability Report (2020), articulated their commitment to achieve carbon neutrality globally by 2050. BHP Group Limited's CEO, in their Climate Change Report (2020), acknowledged their goal of achieving net zero operational GHG emissions by 2050. Microsoft's president, in their Environmental Sustainability Report (2020), acknowledged their commitment to achieve carbon negative by 2030.

[17] Han et al. (2016), Kim et al. (2009), and Lee et al. (2009) presented the high-level construal feature message with the headline 'why we do things' and the low-level construal feature message with the headline 'how we do things'. An action represents a high level of identity or is more abstract when the message emphasizes 'why an action should be performed,' while an action represents a low level of identity or is more concrete when the message specifies 'how an action should be performed' (Vallacher & Wegner, 1987, 1989). Thus, to make a manipulation more salient, the title of the message in our manipulation reflected an emphasis on either desirability or feasibility features.

[18] The figure was adopted from Toyota's (2020) climate change strategy disclosure, gathered from their *Sustainability Report 2020* (see online Appendix 1).

achieve its end goal of net-zero emissions. The manipulation of this independent variable is outlined in Online Appendix 2.

3.2.2. Investment horizon manipulation

To manipulate the investment horizon, we followed Liu et al. (2020). Participants in the short-term (long-term) investment horizon condition were told to seek an investment opportunity and expect to hold the investment for no more than a week (no less than a year). In both conditions, we also added a control condition whereby participants were not presented with a CEO's message, and the provided figure did not emphasize either the desirability or feasibility features.

3.2.3. Dependent variable (willingness to invest)

The primary dependent variable was investors' willingness to invest in the company. Following Rennekamp and Witz (2021), we measured it using two questions. We asked participants to rate the attractiveness of investing in Brighton's stocks on an 11-point scale (0 = *not at all attractive*; 10 = *very attractive*) and the likelihood of investing in Brighton on an 11-point scale (0 = *not at all likely*; 10 = *very likely*). We measured their willingness to invest by combining participants' ratings for those two measures. A Cronbach's alpha of 0.95 for the two measures indicates that both measures captured the same construct.

3.3. Task and procedure

The experiment began by asking participants to assume the role of a prospective investor who seeks either a short- or long-term investment in Brighton Inc. (Brighton), a hypothetical global automobile firm. We first presented them with background information about Brighton and a basic summary of its historical financial information. The latter consisted of a comparative income statement showing that the company's financial performance had improved slightly in terms of an increase in net income over a two-year period, which we adopted from Johnson et al.

(2020).[19]

Second, we provided participants with Brighton's climate change report. This report first outlined Brighton's climate-related risks, opportunities, and initiatives related to increased CO_2 emissions, which were the same across conditions. This information was used to provide an overview of the extent to which the firm had set goals and strategies in response to climate change risks and opportunities; we adopted it from a real-world climate-related disclosure. Next, we followed Fujita et al. (2008) to include two desirability features and two feasibility features across all conditions. The former mentioned Brighton's net-zero CO_2 emission goals for their global plants and electric vehicle production, and the latter explained Brighton's strategies for reaching these goals by introducing renewable energy and utilizing low-carbon technologies.

Participants in the desirability and feasibility conditions read an excerpt of the CEO's message emphasizing either the company's net-zero carbon emissions goal with a figure showing the goal toward plant CO_2 emissions reduction or the company's strategies on introducing new renewable energy and building new infrastructure with a figure showing strategy toward plant CO_2 emission. Participants in the control condition were presented with a figure of plant CO_2 emission reduction without emphasis on desirability or feasibility features.

After reviewing Brighton's climate change report, participants made investment decisions and responded to perception-based questions, as described in the next section. Last, they responded to the manipulation check and demographic questions.

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[19]CLT suggests that the effects of temporal distance in the value of outcomes depend on the high- or low-level construal features, respectively, regardless of whether the value of the outcome is positive or negative (Liberman & Trope, 1998). This means that the positivity of a firm's operating performance is less likely to drive the results. To discover whether such positivity affects individuals' judgment in our investment horizon and framing features manipulation, in the second supplementary experiment, we made the firm's operating performance more neutral, following Liu et al. (2020), who made the firm's financial condition appear slightly uncertain, giving an improving financial position and a worsening financial performance. Consistent with theory, we find that the results are consistent with those of the first and second experiments, which indicate that the positivity of the news or the firm's operating performance does not influence the effect of framing features.

4. Results

4.1. Manipulation check

To assess the effectiveness of the manipulation of feature framing, we first asked participants whether they had received the message from Brighton's CEO (a yes/no question). Those who answered 'yes' were then asked to indicate the feature emphasized in the message. Of the 332 participants, 54 (16%) and 40 (12%) failed to answer the first question and the subsequent question, respectively. The statistical inferences remained unchanged when we excluded the responses of participants who had failed the manipulation check on climate change strategy disclosures. Thus, we used the full sample for the main analysis.

To assess the effectiveness of the investment horizon manipulation, we asked participants to assess how they felt about their assigned investment horizon, on an 11-point scale (0 = *very short*; 10 = *very long*). As expected, the 167 participants assigned a short-term investment horizon indicated that the investment horizon was shorter (mean = 3.5, *SD* = 2.9) than indicated by participants assigned a long-term investment horizon (mean = 6.9, *SD* = 1.9) (t_{330} = 12.71, *p* < 0.001, one-tailed, untabulated). Thus, these results provide support for the effectiveness of the investment horizon manipulation.

4.2. Hypotheses testing

Hypothesis 1 predicts that investors holding a short investment horizon are more willing to invest when feasibility features rather than desirability features are emphasized in the climate change disclosures, but this construal fit effect reduces when investors hold a long investment horizon. Table 1, Panel B, reports the full 2 × 2 + 2 analysis of variance (ANOVA) results, which show a significant interaction effect of the framing features in climate change strategy disclosures and the investment horizon, on investors' willingness to invest ($F_{2,326}$ = 3.11, *p* = 0.046, two-tailed).

We tested Hypothesis 1 by conducting a 2 × 2 ANOVA excluding the two control conditions, given that the hypothesis does not predict whether disclosing a climate change strategy without emphasizing either type of features affects short-term/long-term investors' willingness to invest.

The 2 × 2 ANOVA results in Table 1, Panel C, show a significant interaction of framing features in a climate change strategy disclosure and the investment horizon on investors' willingness to invest ($F_{1,218} = 4.58$, $p = 0.017$, one-tailed). This interaction is represented graphically in Figure 2. Follow-up simple effects by conditions reported in Table 1, Panel D show that participants in the short-term horizon condition were more willing to invest when this disclosure emphasized feasibility features than when it emphasized desirability features (6.9 versus 5.6, $t_{109} = 3.33$, $p < 0.001$, one-tailed). However, participants in the long-term investment horizon group showed no significant difference in willingness to invest regardless of the emphasis on either desirability or feasibility features in the disclosure (6.3 versus 6.5, $t_{109} = 0.28$, $p = 0.390$, one-tailed).

To test Hypothesis 1, we used contrast coding, taking the approach outlined by Guggenmos et al. (2018). The contrast weights for Short-term–Feasibility (Cell 1), Short-term–Desirability (Cell 2), Long-term–Feasibility (Cell 3), and Long-term–Desirability (Cell 4) are +2, –3, +2, –1, respectively. These match our theoretical pattern, which predicts that the difference in willingness to invest between feasibility and desirability will be greater for short-term investors [Cells 1 and 2] and the willingness to invest between feasibility and desirability will not differ between feasibility and desirability [Cells 3 and 4]. This pattern is consistent with our prediction that the difference between a feasibility disclosure and a desirability disclosure is greater for short-term investors than for long-term investors, meaning that we do not expect the difference between Cells 3 and 4 to be significant. The contrast is significant ($t_{218} = 3.015$, $p <$

0.001, one-tailed, untabulated). There is no evidence of unexplained systematic residual variation between cell means ($F = 1.10$, $p = 0.253$, two-tailed, untabulated), and the r^2 of 0.75 means that 75% of the between-cells variance is explained by our hypothesized contrast (untabulated). Therefore, Hypothesis 1 is supported.

[Insert Table 1 here]

[Insert Figure 2 here]

Hypothesis 2 predicts that feelings of processing fluency and perceived management communicative competence mediate the interactive effects of climate change strategy disclosures and the investment horizon on investors' willingness to invest. To measure feelings of processing fluency, we followed Elliott et al. (2017) by asking participants to indicate on an 11-point scale the extent to which the Brighton CEO's message is (1) 'easy to read' (0 = *very difficult to read*; 10 = *very easy to read*), (2) 'difficult to process' (0 = *very difficult to process;* 10 = *very easy to process*), and (3) 'easy to understand' (0 = *very difficult to understand*; 10 = *very easy to understand*). We averaged the scores of the responses to these three questions to obtain an overall score for perceived processing fluency. To measure perceptions of management's communicative competence, we followed Rennekamp and Witz (2021) and asked participants to respond to the following: 'To what extent do you agree with the following statement: Brighton's climate change disclosure demonstrates a high degree of competence in communicating with investors', on an 11-point scale (0 = *strongly disagree*; 10 = *strongly agree*).

We conducted a serial mediation analysis using Model 6 of the SPSS PROCESS macro (Hayes, 2017). The results of the serial mediation analysis in Table 2, Panel D, show that for the short investment horizon, the framing features had a significant indirect effect on investors' willingness to invest, both through feelings of processing fluency and perceived management

communication competence (95% confidence interval [CI] = LL: 0.02; UL: 0.16). On controlling

for the serial mediation effect, the individual indirect effect via processing fluency (M1) was

significant (95% CI = LL: 0.02; UL: 0.30) and the individual indirect effect via perceived

management communicative competence (M2) was not statistically significant (95% CI = LL:

−0.09; UL: 0.30). Therefore, the serial mediation test shows that investors' feelings of processing

fluency and perceived management communicative competence significantly mediate the effect

of the investment horizon and framing features on their willingness to invest, whereby short-term

investors' willingness to invest increases, given the emphasis on feasibility features.

Conversely, when the investment horizon is long, the serial indirect effect of the framing

features in a climate change strategy disclosure through feelings of processing fluency and

perceived management communicative competence on willingness to invest is not significant

(95% CI = LL: −0.09; UL: 0.03, untabulated). Thus, the framing features in the disclosure do not

influence investors' willingness to invest when they plan to make a long-term investment. Thus,

Hypothesis 2 is supported.[20]

[Insert Table 2 here]

[Insert Figure 3 here]

5. Supplementary experiments

5.1. Supplementary experiment 1

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[20] We also examined whether disclosing a climate change strategy without a message emphasizing either desirability or feasibility features (control) affected short-term/long-term investors' willingness to invest. For a long investment horizon, there was no significant difference in investors' willingness to invest between the desirability condition and control condition (6.3 versus 6.7, t_{109} = 0.96, p = 0.339, two-tailed, untabulated) or the feasibility condition and control condition (6.5 versus 6.7, t_{106} = 0.65, p = 0.515, two-tailed, untabulated). For short-term investors, our results show a significant difference in investors' willingness to invest between the feasibility condition and control condition (6.9 versus 5.9, t_{110} = 2.48, p = 0.015, two-tailed, untabulated) but not between the desirability condition and control condition (5.6 versus 5.9, t_{109} = 0.67, p = 0.504, two-tailed, untabalated). The findings suggest that when feasibility features are not emphasized in the climate change strategy disclosure, the disclosure is less likely to convince short-term investors about the company's initiative to address climate change issues.

We conduct the first supplementary experiment to validate whether the consideration to hold a short- or long-term investment activates participants' low- or high-level construal mindset. Because we predict that investors with a short investment horizon experience the construal fit effect, we aim to confirm that the corresponding positive cognitive fit effects from emphasizing desirability features, rather than feasibility features, are attenuated for long-term investors. That is, we confirm whether long-term investors adopt a high-level construal mindset and are less likely to be concerned with the features of climate change strategy disclosures.

In this experiment, we employed a 2 (desirability versus feasibility) × 2 (short- versus long-term horizon) +2 + 2 between-participants design. As in our main experiment, in both investment horizons conditions, we included an additional control condition with no emphasis on framing features in the disclosure. This control condition allowed us to capture the effect of the investment horizon on individuals' construal level mindset. We also included control conditions, whereby we only manipulated the framing features of a corporate climate change strategy to emphasize either desirability features or feasibility features, in the absence of an investment horizon. This control condition allowed us to determine whether framing features, and not only the investment horizon, can influence investors' construal level mindset.

We administered the Behavior Identification Form (BIF) questionnaire (Vallacher & Wegner, 1989) to examine whether asking participants to hold a short- or a long-term investment triggered a low- or high-level construal mindset.[21] We recruited 321 nonprofessional investors from Prolific who had the same qualifications and demographics as the participants in the main experiment.

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[21] Prior studies have widely used the BIF questionnaire to assess the construal mindset (Burgoon et al., 2013; Liberman & Trope, 1998; Liu et al., 2020; Liviatan et al., 2008). This questionnaire contains 25 activities represented by two alternatives—one indicates a low-level description of action/the detailed meaning of an action, and the other, a high-level description of action/the broad meaning of an action (Vallacher & Wegner, 1989).

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The results show that when neither desirability nor feasibility features are emphasized in a climate change strategy disclosure, investors with a long-term horizon construe at a higher level than do their short-term horizon counterparts (14.0 versus 10.6, $t_{80} = 2.34$, $p = 0.011$, one-tailed, untabulated). Moreover, the short-term investors construe at a lower level when feasibility features rather than desirability features are emphasized in the disclosure (10.8 versus 13.5, $t_{80} = 2.28$, $p = 0.013$, one-tailed, untabulated). However, long-term investors adopt a high-level construal mindset, regardless of the emphasis on either desirability or feasibility features in the disclosure (14.9 versus 15.9, $t_{77} = 0.55$, $p = 0.290$, one-tailed, untabulated).[22]

The results from this supplementary experiment, when viewed in conjunction with the results from our main experiment, suggest the following. Short-term investors exposed to climate change disclosures that emphasize feasibility features will adopt a low-level construal mindset, suggesting that a construal fit effect occurs for these investors who have a short investment horizon. However, long-term investors adopt a high-level construal mindset regardless of the emphasis on either desirability or feasibility features in the climate change strategy disclosure, suggesting that long-term investors' high-level construal mindset attenuates the effect of the information conveyed through the framing features.

5.2. Supplementary experiment 2

We conducted a second supplementary experiment for the following reasons. First, we aimed to capture clearer inferences regarding investors' response to the framing features of climate change strategy disclosures using a baseline of a more neutral operating performance instead of a relatively positive operating performance, given that our theory relies on investors' judgment

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[22] These construal-level scores are similar to the scores reported by Liberman and Trope (1998), where the score for a high-level construal mindset is higher than that for a low-level construal mindset (13.44 versus 10.19). Our construal-level scores for the investment horizon are also similar to the scores reported by Liu et al. (2020), where the score for the long-term horizon is higher than that for the short-term horizon (12.244 versus 9.974).

under a more uncertain condition (Liu et al., 2020). Second, we aimed to capture that the potential varying positivity of news does not drive the findings by making the manipulation of feasibility features and the desirability features in our supplementary experiment to be more positively parallel. Third, we further investigated whether investors' environmental values and beliefs influenced their reactions to climate change disclosures.

We employed a $2 \times 2 + 2$ between-subjects design and a case scenario similar to that in the main experiment. The two independent variables were framing features (the emphasis on either desirability or feasibility features) and investment horizon (either short or long). We included an additional control condition in which we did not include a message emphasizing desirability features or feasibility features. We recruited 200 participants as nonprofessional investors from Prolific.[23] The procedure was similar to that for the main experiment. We revised the wording used in the manipulation of desirability features to make it positively parallel with the wording used in the manipulation of feasibility features.[24] We also changed the operating performance of the firm to be more neutral rather than relatively positive.[25]

The supplementary experiment results, as presented in Panel D of Table 3, were consistent with those of the main experiment—that investors holding a short investment horizon show a higher willingness to invest when feasibility features rather than desirability features are emphasized in the climate change strategy disclosures (7.2 vs. 4.9, $t_{66} = 3.79$, $p < 0.001$, one-tailed), but there is no significant difference in the willingness to invest of investors with a long-

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[23] The participants in this supplementary experiment had similar qualifications and demographics as those in our first and second experiments.

[24] We changed the wording of 'while preventing the worst effects of the rapidly changing climate on the company's business operations' to 'while contributing to the acceleration of the global climate change agenda toward a sustainable and environmentally stable future.'

[25] In the main experiment, Brighton's net income (earnings per share) in 2021 is $210,797 ($5.63), which shows a growth from $209,891 ($5.60) in 2020. Following Liu et al. (2020), in the supplementary experiment, we made Brighton's operating performance more neutral; its net income (earnings per share) in 2021 is $209,386 ($5.59), which is slightly lower than its net income (earnings per share) of $209,891 ($5.60) in 2020.

term investment horizon regardless of the emphasis on either desirability or feasibility features in the climate change strategy disclosure (7.3 vs. 7.0, $t_{63} = 0.45$, $p = 0.328$, one-tailed). The results also revealed a significant indirect effect of the framing features of the disclosures on investors' willingness to invest via feelings of processing fluency as well as perceived management communication competence when investors' investment horizon is short (95% CI = LL: 0.05; UL: 1.16, untabulated) rather than long (95% CI = LL: −0.21; UL: 0.14, untabulated).

We performed an additional analysis to determine whether individuals' environmental values and beliefs influence the moderating effect of the investment horizon on the association between the climate change strategy disclosure and investment decisions. We employed the Environmental-Portrait Value Questionnaire (E-PVQ) (Bouman et al., 2018) to assess individuals' environmental values and beliefs.[26] The results of a 2 × 2 ANOVA test that included biospheric, altruistic, egoistic, and hedonic values as the covariates showed a significant effect of biospheric ($F_{1,190} = 9.74$, $p = 0.002$, two-tailed, untabulated) and egoistic values ($F_{1,190} = 3.02$, $p = 0.084$, two-tailed, untabulated) on investors' willingness to invest, and the interaction effect between the framing features and the investment horizon on investors' investment decisions remained significant ($F2_{,190} = 4.98$, $p = 0.008$, two-tailed, untabulated). Our findings are consistent with those of prior research that suggests biospheric values reflect concerns regarding the environment in itself, which are more likely to influence pro-environmental actions (Bouman et al., 2018, 2020), such as investment in firms with climate-related initiatives and commitment.

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[26] The E-PVQ consists of 17 questions related to four values considered to underlie individuals' environmental beliefs and values: biospheric (i.e., valuing the environment), altruistic (i.e., valuing other human beings), egoistic (i.e., valuing personal resources), and hedonic (i.e., valuing pleasure and comfort). Following Bouman et al. (2018), we asked participants to indicate the extent to which each portrayed person was similar to them, on a scale ranging from 0 (*not like me at all*) to 10 (*very much like me*). We then calculated a composite score of each value from the mean of the respective items. Each Cronbach's alpha of biospheric, altruistic, egoistic, and hedonic values exceeded 0.75 (0.91, 0.90, 0.92, and 0.77, respectively), indicating the questions captured a similar construct, respectively (Taber, 2018).

Our results also suggest that individuals' environmental beliefs and values did not affect the moderation effect of the investment horizon on the association between climate change strategy disclosure and their investment decisions.

6. Conclusion

We investigate how the framing features in corporate climate change strategy disclosures and investors' investment horizon jointly influence their judgments. Consistent with our prediction, we find that the effect of these framing features on investors' investment decisions is moderated by investors' investment horizons. Specifically, short-term investors are significantly more willing to invest when the company emphasizes feasibility features over desirability features in the disclosures. However, long-term investors exhibit no significant difference in willingness to invest, regardless of the framing features in these disclosures. We provide theory and supporting evidence that a construal fit promoted by the framing features and investors' investment horizon enhances their feelings of processing fluency and perceived communicative competence of management, which results in increased willingness to invest. Our findings suggest that the investment horizon is a crucial factor that influences the type of climate change information features that investors consider the most when deciding to invest.

Notably, our findings can inform policymakers and regulators. Our study is timely for the issuance of IFRS S2 (ISSB, 2023), ESRS E1 (EFRAG, 2022), and regulators such as the SEC (2022), who recently released the proposed requirements on climate change disclosure. These standards and proposed standards aim to better inform investors' decision-making regarding the impact of climate-related risks and opportunities on companies' business operations and financial performance. In particular, our study provides support for regulators' advocacy for greater emphasis on feasibility features relative to desirability features of the climate change

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strategy, as this type of disclosure promotes short-term investors' feeling of processing fluency and perception of management's communicative competence.

Nevertheless, our study has certain limitations that provide opportunities for future research. First, we focus on favorable information settings, where we hold constant the company's climate change performance against previous targets (i.e., their targets on net-zero carbon emissions). Regulators recommend that companies disclose not only the favorable outcomes but also the unfavorable outcomes of their environmental or climate change performance (FRC, 2020). Future research may consider whether the positive or negative outcomes of a company's current performance influences the effects of the framing features in a climate change strategy disclosure on investors' judgments. Second, in this study, we focus on positive feasibility and desirability features of messages, following Fujita et al. (2008), as our theory explains that low- or high-level features can have either negative or positive values (Liberman & Trope, 1998). As we do not experimentally explore settings involving negative features of messages, or settings involving clear operational sacrifices to achieve climate change goals, we caution against the overgeneralization of our findings to these unexplored settings.

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Tables

Table 1. Descriptive Statistics and Results of Investors' Willingness to Invest (Main Experiment)

Panel A: 2×2+2 descriptive statistics: mean (SD) [n= sample size]

Horizon	Features			Overall
	Desirability	*Feasibility*	*Control*	
Short-term	5.6 (2.4)	6.9 (1.8)	5.9 (2.5)	6.1 (2.3)
	[n=55]	[n=56]	[n=56]	[n=167]
Long-term	6.3 (2.1)	6.5 (2.1)	6.7 (1.8)	6.5 (2.0)
	[n=57]	[n=54]	[n=54]	[n=165]
Overall	6.0 (2.3)	6.7 (1.2)	6.3 (2.2)	
	[n=112]	[n=110]	[n=110]	

Panel B: 2×2+2 ANOVA results

Source	SS	df	Mean square	F	*p*-value
Horizon	12.39	1	12.39	2.68	0.103
Features	29.2	2	14.6	3.15	0.044
Horizon x *Features*	28.81	2	14.41	3.11	0.046
Error	1509.97	326	4.63		

Panel C: 2×2 ANOVA results (excluding control groups)

Source	SS	df	Mean square	F	*p*-value
Horizon	1.51	1	1.51	0.33	0.565
Features	29.16	1	29.16	6.4	0.012
Horizon x *Features*	20.84	1	20.84	4.58	0.017*
Error	993.17	218	4.56		

Panel D: Simple effects tests for willingness to invest

Comparisons	df	t	*p*-value
The effect of *Features* given *Short-Term horizon*	109	3.33	< 0.001*
The effect of *Features* given *Long-Term Horizon*	109	0.28	0.390*
The effect of *Horizon* given *Desirability*	110	1.82	0.072
The effect of *Horizon* given *Feasibility*	108	0.24	0.810

Note: *Features* is manipulated as either *desirability* or *feasibility features*. Also, we provided a *control condition* where there is neither the emphasis of desirability nor feasibility features. *Horizon* is manipulated as either *short-term* or *long-term* horizon. *Willingness to invest* is the average of the two questions on an 11-point scale: "How attractive would you consider an investment in Brighton's stock to be?" (0 = *not at all attractive*, 10 = *very attractive*) and "How likely would you be to purchase Brighton's stock?" (0 = *not at likely*, 10 = *very likely*). * denotes a one-tailed *p*-value for the directional prediction.

Table 2. Serial Mediation Analysis

Panel A: Mean (SD) [sample size] *Feelings of Processing Fluency* (M1)

	Desirability	*Feasibility*	*Control*	Overall
Short-term	5.8 (2.0) [n=55)	6.6 (1.6) [n=56]	6.8 (1.7) [n=56]	6.4 (1.8) [n=167]
Long-term	6.9 (1.6) [n=57]	6.6 (1.6) [n=54]	6.6 (1.8) [n=54]	6.7 (1.7) [n=165]
Overall	6.3 (1.9) [n=112]	6.6 (1.6) [n=110]	6.7 (1.7) [n=110]	

Panel B: Mean (SD) [sample size] *Perceived Communicative Competence* (M2)

	Desirability	*Feasibility*	*Control*	Overall
Short-term	6.4 (2.6) [n=55)	7.3 (1.6) [n=56]	7.3 (1.8) [n=56]	7.0 (2.1) [n=167]
Long-term	7.5 (1.8) [n=57]	7.5 (1.8) [n=54]	7.3 (1.9) [n=54]	7.5 (1.8) [n=165]
Overall	7.0 (2.3) [n=112]	7.4 (1.7) [n=110]	7.3 (1.8) [n=110]	

Panel C: Short-term Investment: Path Estimates and Coefficients for Serial Mediation Model

Path Estimate	Path Coefficient	*p*-value*	LLCI[a]	ULCI[a]
a_1	0.52	0.002	0.19	0.85
a_2	0.24	0.211	−0.14	0.63
d_1	0.35	< 0.001	0.17	0.52
b_1	0.26	0.007	0.07	0.45
b_2	0.41	< 0.001	0.25	0.57
c'	−0.16	0.433	−0.56	0.24

Table 2 (continued)

Panel D: Short-term Investment: Path Estimates and Coefficients for Serial Mediation Model

Indirect Effect	Effect	LLCI[a]	ULCI[a]	Significant
Total indirect effect	0.31	0.07	0.57	Significant
Feelings of processing fluency (M1)	0.14	0.02	0.30	Significant
Perceived communicative competence (M2)	0.10	-0.09	0.30	Not significant
M1 and M2 sequential relationship	0.07	0.02	0.16	Significant

This table presents descriptive statistics (Panels A and B) and the results of serial mediation analysis (Panels C and D) using the SPSS PROCESS macro, Model 6 (Hayes 2017). The assessment of *feelings of processing fluency* is the average score of participants' responses to three questions on an 11-point scale. Participants are asked to indicate to what extent they felt Brighton's climate change disclosure is (1) "easy to read" (0 = *very difficult to read*, 10 = *very easy to read*), (2) "difficult to process" (0 = *very difficult to process*, 10 = *very easy to process*), and (3) "easy to understand" (0 = *very difficult to understand*, 10 = *very easy to understand*). The assessment of *perceived communicative competence* is participants' response to a question on an 11-point scale: "To what extent do you agree with the following statement: Brighton's climate change disclosure demonstrates a high degree of competence in communicating with investors" (0 = *strongly disagree*, 10 = *strongly agree*).

[a] the significance of the indirect effects is assessed using 95 percent confidence intervals gained through bootstrapping approaches.

* denotes a one-tailed *p*-value for the directional prediction.

Table 3. Descriptive Statistics and Results of Investors' Willingness to Invest (Supplementary Experiment 2)

Panel A: 2×2+2 descriptive statistics: mean (SD) [n= sample size]

Horizon	Features			Overall
	Desirability	*Feasibility*	*Control*	
Short-term	4.9 (2.8)	7.2 (2.2)	5.3 (2.7)	5.8 (2.8)
	[n=33]	[n=35]	[n=34]	[n=102]
Long-term	7.3 (2.0)	7.0 (2.2)	6.6 (2.1)	7.0 (2.1)
	[n=31]	[n=34]	[n=33]	[n=98]
Overall	6.0 (2.7)	7.1 (2.2)	5.9 (2.5)	
	[n=64]	[n=69]	[n=67]	

Panel B: 2×2+2 ANOVA results

Source	SS	df	Mean square	F	*p*-value
Horizon	69.95	1	69.95	12.65	0.001
Features	57.11	2	28.56	5.17	0.007
Horizon x *Features*	54.64	2	27.32	3.11	0.008
Error	1072.54	194	5.53		

Panel C: 2×2 ANOVA results (excluding control groups)

Source	SS	df	Mean square	F	*p*-value
Horizon	41.61	1	41.61	7.77	0.006
Features	36.28	1	36.28	6.77	0.010
Horizon x *Features*	54.00	1	54.00	10.08	0.001*
Error	691.22	129	5.36		
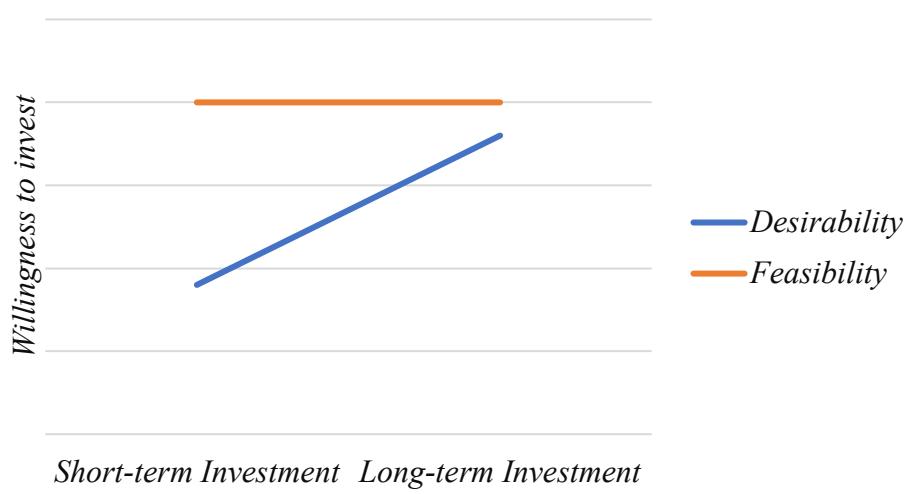
Panel D: Simple effects tests for willingness to invest

Comparisons	df	t	*p*-value
The effect of *Features* given *Short-Term horizon*	66	3.79	< 0.001*
The effect of *Features* given *Long-Term Horizon*	63	0.45	0.328*
The effect of *Horizon* given *Desirability*	62	3.89	0.001
The effect of *Horizon* given *Feasibility*	67	0.29	0.766

Note: *Features* is manipulated as either *desirability* or *feasibility* features. Also, we provided a *control condition* where there is neither the emphasis of desirability nor feasibility features. *Horizon* is manipulated as either *short-term* or *long-term* horizon. *Willingness to invest* is the average of the two questions on an 11-point scale: "How attractive would you consider an investment in Brighton's stock to be?" (0 = *not at all attractive*, 10 = *very attractive*) and "How likely would you be to purchase Brighton's stock?" (0 = *not at likely*, 10 = *very likely*). * denotes a one-tailed *p*-value for the directional prediction.
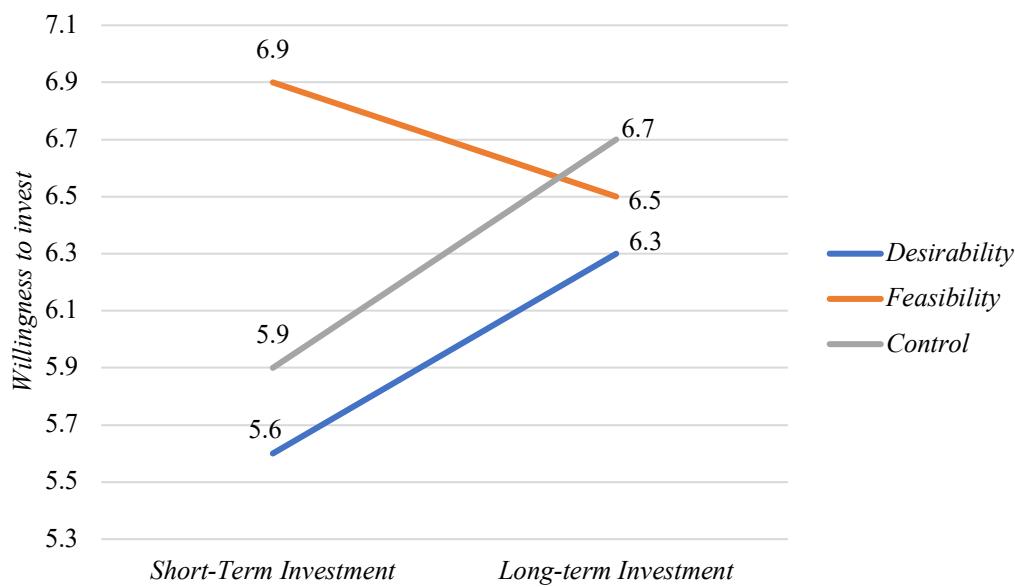
Figures

Figure 1 Predicted Interaction

Willingness to invest

Desirability
Feasibility

*Short-term Investment   Long-term Investment*
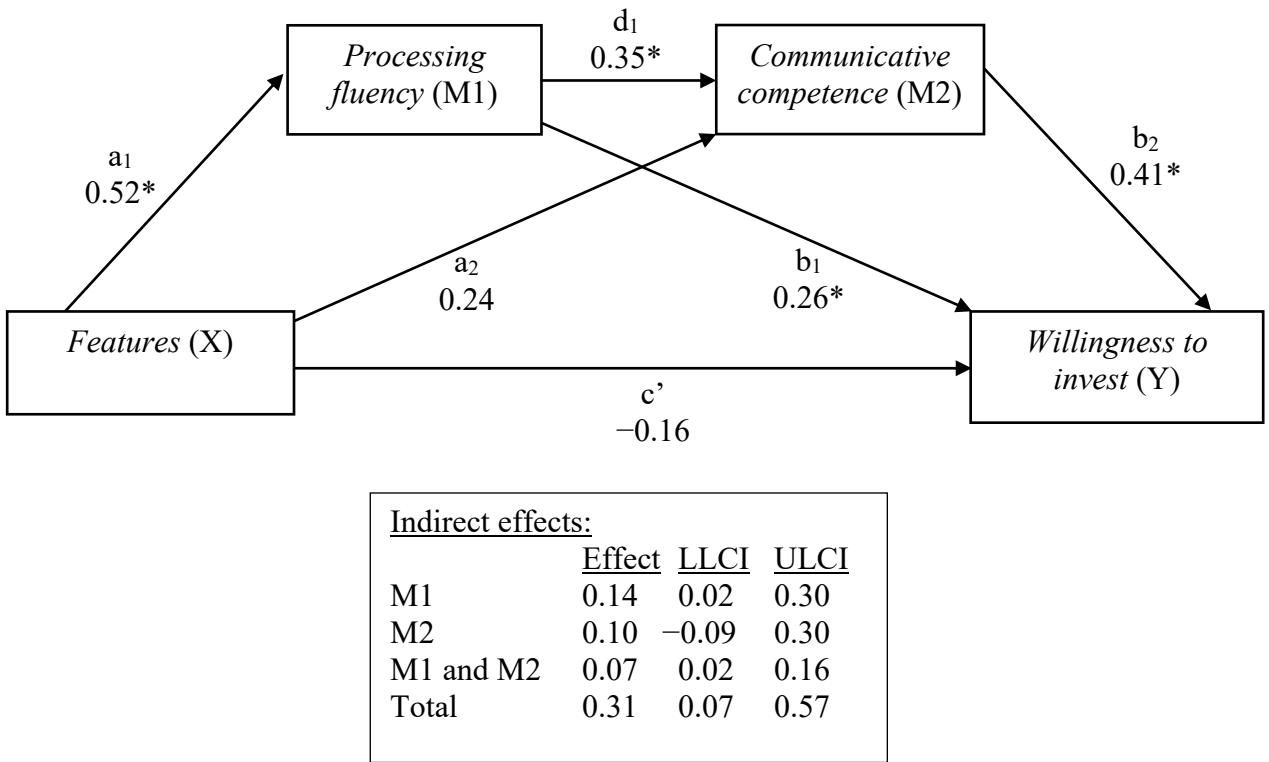
This figure illustrates the prediction of the hypothesis. In the experiment, *framing features of climate change strategy disclosure* is manipulated at two levels which are emphasizing *desirability features* (emphasizing why companies' goals on climate change should be taken) or emphasizing *feasibility features* (emphasizing how companies can reach their goals on climate change). *Investment horizon* is manipulated at two levels which are *short-term* (holding the investment for no more than a week) or *long-term* (holding the investment for no less than a year). *Willingness to invest* is the average of the two questions on an 11-point scale: "How attractive would you consider an investment in Brighton's stock to be?" (0 = *not at all attractive*, 10 = *very attractive*) and "How likely would you be to purchase Brighton's stock?" (0 = *not at likely*, 10 = *very likely*).

Figure 2 Willingness to invest results

This figure illustrates the results of investors' willingness to invest in the experiment. In the experiment, *framing features of climate change strategy disclosure* is manipulated at two levels which are emphasizing *desirability features* (emphasizing why companies' goals on climate change should be taken) or emphasizing *feasibility features* (emphasizing how companies can reach their goals on climate change). Also, we provided *Control condition* where there is neither an emphasis of *desirability* nor *feasibility features*. *Investment horizon* is manipulated at two levels which are *short-term* (holding the investment for no more than a week) or *long-term* (holding the investment for no less than a year). *Willingness to invest* is the average of the two questions on an 11-point scale: "How attractive would you consider an investment in Brighton's stock to be?" (0 = *not at all attractive*, 10 = *very attractive*) and "How likely would you be to purchase Brighton's stock?" (0 = *not at likely*, 10 = *very likely*).

Figure 3 A serial mediating model for short-term investment horizon

Indirect effects:

	Effect	LLCI	ULCI
M1	0.14	0.02	0.30
M2	0.10	−0.09	0.30
M1 and M2	0.07	0.02	0.16
Total	0.31	0.07	0.57

This figure summarizes the results of a serial mediating model analysis using the SPSS PROCESS macro, Model 6 (Hayes 2017) for the serial mediating variables of the *feelings of processing fluency* and *perceived management's communicative competence* on investors' *willingness to invest*. We test whether when the investment horizon is *short*, the effect of framing features of the corporate climate change strategy [X] on investors' *willingness to invest* [Y] occurs indirectly through investors' *feelings of processing fluency* [M1] and *perceived management's communicative competence* [M2]. *Features* refer to framing features of climate change strategy disclosure which are either emphasizing *desirability features* (emphasizing why companies' goals on climate change should be taken) or emphasizing *feasibility features* (emphasizing how companies can reach their goals on climate change). *Processing fluency* refers to participants' perception that company's climate change disclosure is easy to process, difficult to understand, and easy to read. *Communicative competence* refers to participants' perception that management has high competence in communicating corporate climate change strategy disclosure. *Willingness to invest* is the average of participants' ratings on the attractiveness to invest in the company and the likelihood to invest in the company on an 11-point scale.

Path coefficients are reported below each path label in the figure. An asterisk on the path coefficient indicates that the path is significant based on a 95 percent confidence interval.