Climate Insight

ClimateWorks FOUNDATION

Institutional Investors and the Behavioral Barriers to Taking Action on Climate Change

A research report for ClimateWorks Foundation, prepared by Danyelle Guyatt and Julian Poulter

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Dr Danyelle Guyatt, Sustainable Investment Specialist, Climate Insight
Julian Poulter, Partner, Energy Transition Advisors

1 Executive summary

"Our conviction that we are right on climate is stronger than our fear of failure"

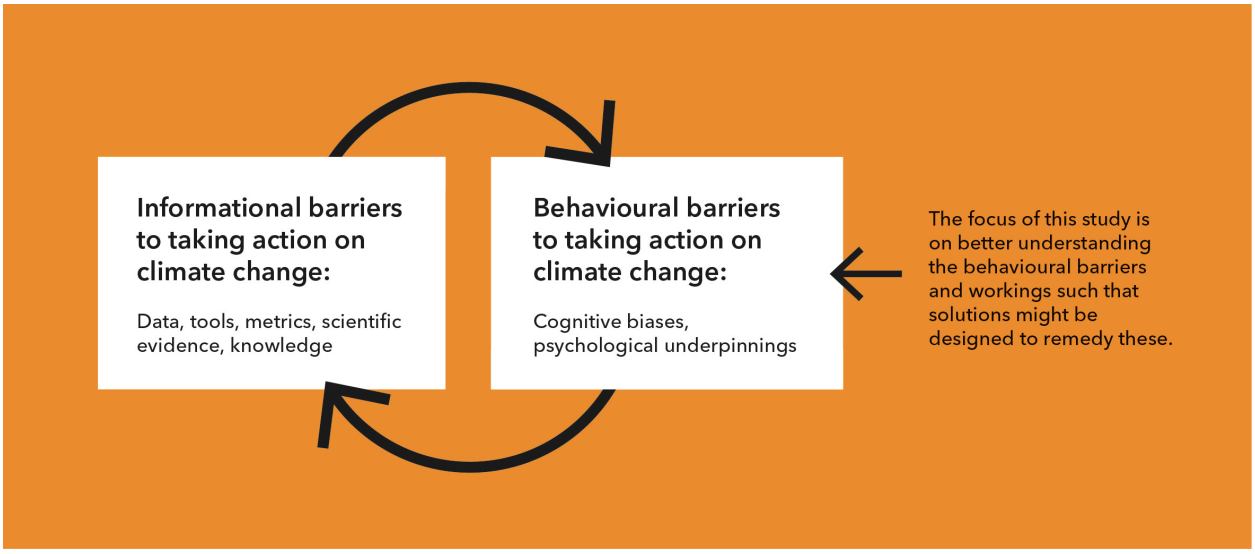
Quote from a CIO at an asset owner organization

This paper presents the findings of a research project funded by ClimateWorks Foundation on Institutional Investors and the Behavioral Barriers to Taking Action on Climate Change. The project focuses on the behavioral drivers that impact institutional investors' ability and/or willingness to integrate climate-related risks and opportunities into their investment decisions.

While many investors recognize the growing need to incorporate climate change into investment decisions, it is not a straightforward task and there are a multitude of challenges that investors face that slow down the speed and scale of action required to adapt investment processes. Some of these challenges have been widely debated and often cited, such as lack of consistent signals from government policy-makers, the need to upscale new technology advances, a lack of suitable investable opportunities or lack of data, models, or suitable metrics.

However, there are additional challenges within the investment community beyond those most commonly cited (which tend to be 'informational' barriers), and these relate specifically to investor behavior itself (Figure 1). Moving beyond the neoclassical assumptions of rationality and perfect information as part of that philosophy's inadequate approach to investing opens up the door to considering a number of internal behavioral conditions that might be slowing down real action by institutional investors on climate change.

Figure 1. Informational and behavioral barriers to taking action on climate change



To date, behavioral barriers are much less widely discussed in the context of investors and climate action, although the investment community is aware of some of these issues, particularly short-termism, as evidenced by the different long-term investing 'clubs'[i] that have formed over the years. Yet at the industry-wide level – and indeed at the regulatory level – proponents of investor action on climate change tend to focus more on fulfilling 'informational' needs, such as best practice processes, developing new data, tools, and metrics in the hope that knowledge and information will propel investors to take action. Indeed, the Financial Stability Board's Taskforce on Climate-related Financial Disclosure recommendations go to the heart of the lack of data and metrics and provide a useful framework for companies and investors to move forward on their actions and disclosure in relation to climate change.

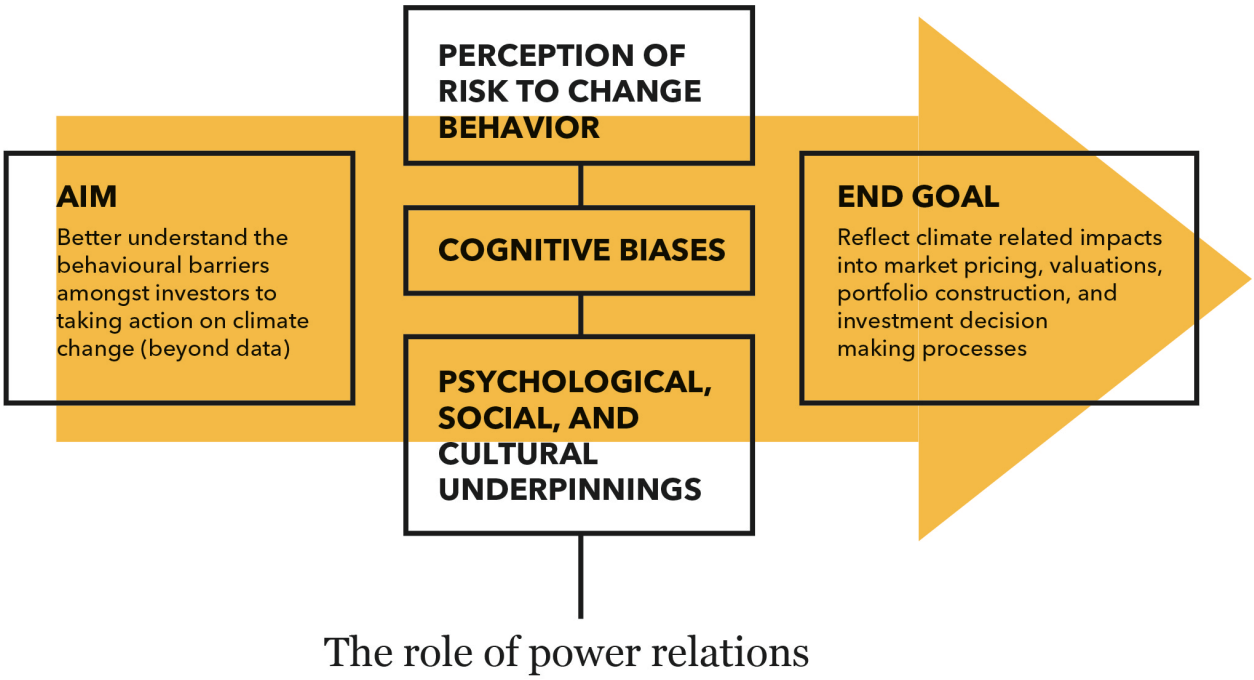
However, very little attention is, in comparison, placed on how knowledge is processed by investors and interpreted through their mental models. The psychological underpinnings of investment decisions, the prevalence of cognitive biases, cultural drivers, and personal relationships (both at the individual level and inside and outside organizations), and how these influences might impact the level of action on climate change needs further attention. Putting it another way, the assumption that if decision-makers 'have information, will act' is still predicated on the assumption of rationality, even when there is clear evidence that this is not the case[ii].

Unless we more explicitly acknowledge the human dimension of investment decisions, the investment community will continue to perpetuate and participate in short-termism and fail to adequately manage systemic risks, such as climate change. It is for this reason that we are studying institutional investors and their response to climate change as "humans" who have bounded rationality[iii] and make decisions based on a range of influences, some of which are conscious and others unconscious or automatic.

1.1 Research objective

The aim of this research is to explore some of behavioral complexities that arise in responding to climate change, from the perspective of institutional investors themselves. Ultimately, the goal of this first phase of research was to reveal and better understand the behavioral challenges to incorporating climate change into investment processes, such that we might move closer to solutions and outcomes whereby climate change risks and opportunities are embedded into the way assets are valued and reflected in how investment decisions are made (Figure 2).

Figure 2. Behavioral barriers to taking action on climate change amongst investors



1.2 Research steps

The aim was to study the institutional investment community from the inside out, to see the world through their eyes to better understand their perspective on climate change and the barriers that might be limiting wider action on climate change.

The research has been carried out through a number of stages, as set out in Figure 3. The research, data collection, and analysis of the research was conducted in six main stages:

1. Review of relevant research and evidence
2. Design and distribute a survey to institutional investors (globally, across functions)
3. Undertake interviews with CIOs, CEOs, and senior staff inside asset owner organizations[iv]
4. Examine the findings and distill key themes
5. Consider the implications for stakeholders
6. Suggest recommendations and next steps

Figure 3. Research steps

1.3 Key themes and findings

1.3.1 Aggregated survey findings

Overall our research found evidence of cognitive biases and psychological underpinnings for these, including across the areas that were the focus of this study, namely myopia, herding, and reliance on heuristics and rules of thumb. In addition, the open-ended responses to the survey and the follow-up interview process revealed the importance of other behavioral biases including cognitive dissonance, narrow framing, loss aversion, status quo bias, and overconfidence.

Figure 4. Aggregate survey findings

THEME	KEY FINDINGS	COGNITIVE BIASES	PSYCHOLOGICAL UNDERPINNINGS
Beliefs	There is general acknowledgment of climate change as a systemic risk, but in practice at the day-to-day level, there is a degree of separation from the issue in terms of what that means in practice.	Myopia, cognitive dissonance	Uncertainty, denial, judgmental discounting, perceived control
Perceived Difficulty	There is growing effort and momentum in some areas (such as engagement with companies on climate change), yet it is still "not really incorporated into investment analysis."	Narrow framing, heuristics, loss aversion	Habit, conflicting goals
Perceived Behavior of Peers	Most respondents do not think their peers are taking strong action on this issue so there is a lack of motivation to act.	Herding, loss aversion	Tokenism and rebound effect, social comparison, norms and conformity
Perceived Difficulty of Specific Actions	There is a degree of resistance to change to existing frameworks, it takes time, energy, and motivation to see it through, which may not be present at the individual level or across organizations.	Heuristics and rules of thumb, anchoring	Habit, perceived risk of taking action, conflicting goals, mistrust and reactance
Perceived Challenges Incorporating into Investment Decisions	Of the three dominant barriers that were identified by respondents, two of them relate to behavioral processes (lack of organization buy-in and perceived complexity) and the third relates to information needs (lack of data).	Status quo bias, cognitive dissonance	Habit, social comparison, norms and conformity
Perception of Risk of Taking Action	When it comes to taking action to try to change "the other" (external fund managers or companies), it is considered to be easier. When it comes to changing their own practices (i.e., valuation frameworks or asset allocation models), that is considered to be much more difficult.	Status quo bias, narrow framing	Denial, perceived control, perceived risk of taking action, conflicting goals
Perception of Risk of NOT Taking Action	Half the respondents believe that failure to act on climate change would not result in a less diversified portfolio.	Overconfidence effect	Judgmental discounting, denial, belief in solutions

1.3.2 Disaggregated survey findings, power relations

To examine the prevalence and role of power relations along the investment management chain, we divided up the sample into Group 1 'powerful, direct' and Group 2 'less powerful, indirect' categories to look for any differences that might emerge in terms of the role and functions within the investment community, defined as:

Group 1 – Powerful, Direct: Defined in this study to include Chief Investment Officers, Chief Executive Officers, asset allocation strategists, board members, trustees, general managers of investments, heads of division/department, portfolio managers.

> Group 1 sample size was 42 respondents that fell into this category, representing 47% of the total sample size of 89.

Group 2 – Less powerful, Indirect: Defined in this study to include Environmental Social and Governance (ESG)/sustainability specialists, consultants, specialist advisors, independent researchers, data/analytics providers, industry associations, or news service providers.

> Group 2 sample size was 47 respondents that fell into this category, representing 52% of the total sample size of 89.

Our analysis suggested that there is a difference between those agents that have more direct responsibility for investment decisions, compared to those that have more indirect influence. This difference was not only found to be statistically significant at the total sample level, but it was also significant when some of the individual biases and drivers were examined, with Group 1 scoring lower than Group 2. The results also suggested that Group 1 was more likely to find it difficult to integrate climate change into valuations, to see how it fits into existing frameworks and investment practices, and its compatibility with fiduciary duty, compared to Group 2 respondents who scored more highly across all of these dimensions (where the differences were also found to be statistically significant).

1.3.3 Cognitive dissonance

The disaggregated analysis of the survey responses pointed to evidence of a growing dislocation within the investment community, suggesting that there is a fragmentation of culture emerging which could potentially destabilize the status quo and allow new perspectives to filter through the system. A framework is presented in this paper to support a theory of change, where the greater the divergence within the investment community, the harder it will be for resistant investors to continue responding to the prevalence of dissonance through denial or defensiveness, but rather shift more investors onto a pathway of decisive action.

1.3.4 Interview themes

There were a number of themes that emerged from the interviews in terms of how individuals in senior positions inside asset owner organizations have personally experienced the challenges with incorporating climate change into investment processes. The insights were many and various, but the highlights of these interactions revealed the following:

Leadership success in overcoming barriers: No matter where the inspiration for leadership within a fund came from or how it spread, the leaders displayed a surprisingly broad success rate across all types of behavioral barriers and were more than happy to live with the discomfort of potential reputational, career, and other risks.

Information versus behavioral barriers: No interviewees felt that the challenges with taking action on climate change was purely due to lack of data or availability of models – or even policy or technology breakthroughs – all the interviewees talked about the importance of people, trust, and personal relationships inside their organizations.

Beliefs: Personal belief provided a lot of the determination to do something different from their peers – not a moral or ethical belief, but one steeped in the belief that climate change is not going away, and that mitigation is the logical thing to do.

Trust: Strong overall fund/individual performance is a key element that allowed an individual to drive a proactive climate agenda and develop a strategy. This performance creates trust from the board that allows the board to overcome any fears about risk in being unique or proactive over climate. It also allowed leaders to ride out any difficult periods where (for example) climate-related investment decisions might generate short-term underperformance.

Culture: Pressure on C-suite executives from even one or two board members appears to be helpful to open up a dialogue on the issue, building a culture that embraces change and ultimately drives action.

Perception of risk: The interviewees all felt that the degree of financial risk to become a leader was small. This is understood by the leaders who can allocate capital to low carbon assets and still take minimal career or reputational risk.

Finding the comfort zone: There was some evidence of anchoring amongst the interviewees to what they feel most comfortable with. Most explained that it is far easier to expand a fund's climate strategy and invest in low carbon opportunities if the returns from existing investments are reasonable. According to most of the interviewees, the returns don't have to be higher than other areas, just comparable to other opportunities in similar asset classes.

Peers: Rather than feeling pressure to stay in the pack and not go too far from the 'norm,' the leaders were often disparaging of peers who had failed to see the obvious risks or who were unwilling to overcome any fears or biases in order to adjust their investment processes in view of climate-related impacts.

External pressure: Our discussions indicated that external pressure from beneficiaries/members, employers, regulators, NGOs, or the media to take action can be effective at overcoming behavioral barriers by (for example) helping key decision-makers to prioritize climate change internally across asset owners' executive functions.

1.3.5 Leaders and biases

With acknowledgement of the inherent selection bias in the interviewees that was skewed towards the leaders versus those investors that are less progressed in terms of climate change action (as the latter is also likely to be less willing to participate in studies such as this), some of the most surprising findings concerned behavioral biases that we had anticipated in our analysis but actually didn't shown up in interviews. The absence of many of these biases in leaders was one of the most important findings of the study because it demonstrates that with some effort and attention, these biases are not a 'given' and can be overcome. Indeed, these insights will help to guide further efforts to design solutions and alter the framing of climate change inside the executive of asset owner organizations as a way to overcome the biases that may prevail outside of the so-called 'leading' community of investors.

1.4 Implications for stakeholders

The findings of this report have potential implications for asset owner organizations in terms of how they evaluate and conduct their investment decision-making processes, governance arrangements, and the questioning of assumptions around existing beliefs and narratives, particularly with respect to how they are managing climate change impacts. It will also have potential implications for how different industry groups and associations communicate with investors, develop guidance material, conduct workshops, design surveys, present evidence, and establish new frameworks to support investor action on climate change (Figure 5).

It is clear that leadership creates more leadership and that we have to leverage the power of the leaders and their stories and experience in a far more coordinated manner in order to shift the consensus position. The leaders can be far more influential than external experts recommending a strategy. However, experts can facilitate leadership amongst peers.

The data from the PRI's supported Inevitable Policy Response initiative will be important to help facilitate behavioral change and the findings of this research will be immediately shared with all investment associations that can use these insights to work with investors.

Figure 5. Stakeholder recommendations

STAKEHOLDERS	RECOMMENDATIONS
CIOs, CEOs, board members, trustees	• Build awareness of behavioral issues and subject matter in order to critique their own thinking and the behaviors of others • Review governance arrangements and seek to diversify senior layers of decision-making • Go beyond information and ask more challenging questions around beliefs and attitudes • Create an internal sponsor for behavioral issues • Agree on a process to address the behavioral challenges • Learn from leaders – or if a leader, be willing to engage with peers • Integrate behavioral insights into the design and implementation of climate-related investment strategies as a cross-check to decision-making processes
ESG/sustainability specialists	• Build skills to interact internally and engage with CIOs, CEOs, board members, and trustees, to challenge the embedded hierarchies and power relations that may limit action • Champion the importance of addressing behavioral barriers to climate change internally at the organization level and also across the wider industry • Participate and bolster collaborative initiatives focused on improving decision-making and fostering behavior that is more closely aligned with climate-related policies and beliefs
Industry bodies and associations	• Widen the focus of attention from information needs to consider behavioral shortcomings through design of outreach with members, guidance documents, events • Embed an awareness of cognitive biases, psychology, and social and cultural influences into strategy for outreach and mobilization plans on climate action
Funders	• Reflect behavioral barriers in funding strategies • Help build and fund collaborative networks
Educators and researchers	• Undertake more research on 'real world' behavioral barriers amongst investors to taking action on climate change

Regulators	● Consider implications of cognitive biases and psychological, social, and cultural drivers for best practice governance standards across the financial sector ● Build standards around best practice behaviors and human relationships to foster long-termism, not only incentives but through organizational design and challenging prevailing power relations ● Build systems to identify early warning signs and remedies for short-term investor behavior
Service providers	● Consider the behavioral biases that may prevail within their own internal decision-making processes ● Understand the potential biases of their clients and stakeholders ● Integrate this understanding into their product and service design
NGOs	● Ensure context of behavioral barriers embedded in communication and engagement strategies

1.5 Recommendations and next steps

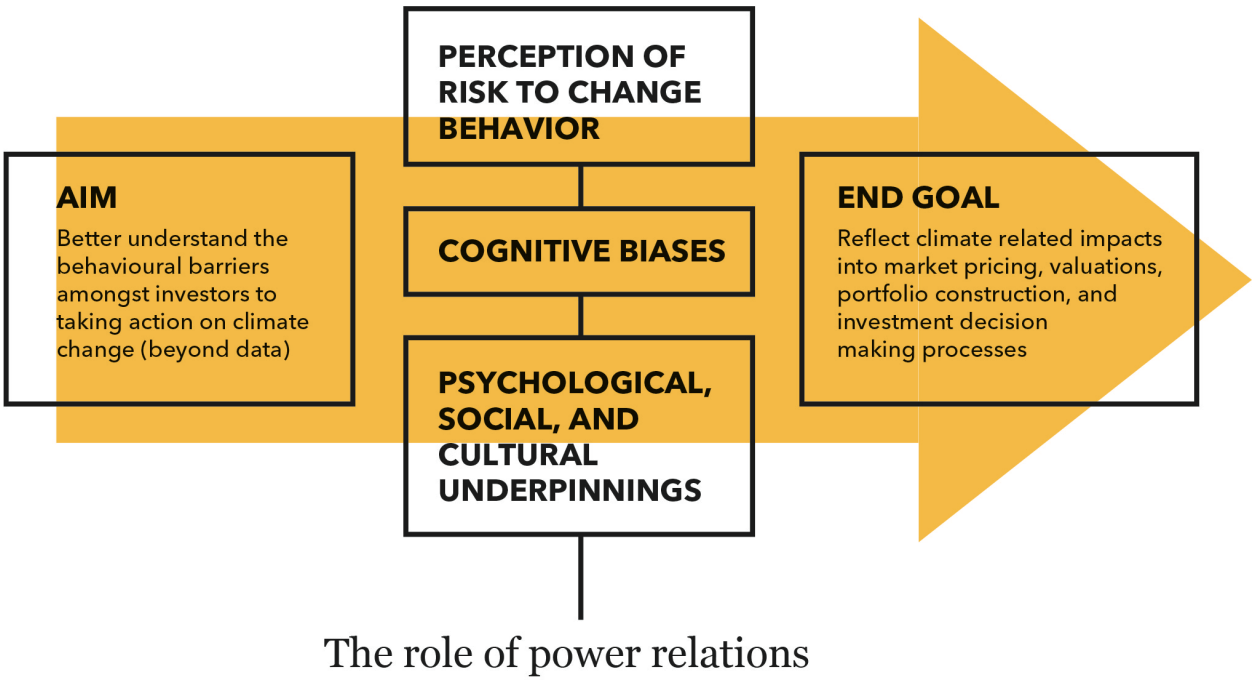
In order to convert this first phase of research into functional tools and practical guidance, a second phase of the program is required to:

- Build on the understanding of the psychological, social, and cultural barriers that are slowing down or stopping action on climate change, beyond data
- Integrate the findings into existing investor programs and outreach efforts with their members
- Design solutions to shift investor behavior on climate change to achieve desired outcomes, including challenging prevailing power relations
- Develop research, tools, and collaboration efforts, including a leadership hub
- Shift the consensus position to one of collective leadership

2 Review of research and evidence

This study draws from the growing body of academic and industry research on the behavioral barriers that limit climate change action. Most of the research does not directly address the institutional investor community (with a few exceptions[v]). Rather, it focuses on the role of consumers and political agents in mitigating climate change. Nevertheless, there is a plethora of research and literature relevant to better understanding the behavioral barriers to taking action on climate change amongst institutional investors. For the purposes of this study, these are synthesized in Figure 6.

Figure 6. Behavioral barriers to taking action on climate change amongst investors



The aim of the study was to better understand some of the behavioral barriers of institutional investors that may limit the extent to which climate-related risks and opportunities are adequately reflected into market pricing, valuations, portfolio construction, and investment decision-making processes. This was examined by considering the following areas of research:

- **Perception of risk**: Better understand investors' perception of risk associated with changing behavior to incorporate climate-related impacts into valuation frameworks, portfolio construction, and investment decision-making processes.
- **Cognitive biases**: Consider the prevalence of behavioral biases (in particular short-termism, heuristics, herding, and cognitive dissonance) to better understand some of the practical challenges to shifting behavior.

- **Psychological, social, and cultural underpinnings**: Better understand the psychological, social, and cultural influences that impact the extent to which investors are willing and/or able to incorporate climate change into investment processes.
- **Power relations**: Build a greater awareness of the different roles that agents play and their influence along the investment management chain and within organizations, to further escalate investor action on climate change.

2.1 Efficient market hypothesis (EMH) and market pricing

When it comes to managing systemic risks such as climate change, the assumption that the market is able to price in complexity and uncertainty in a rational and orderly way needs to be revisited. Indeed, the work of many economic psychologists and behavioral financiers suggests that human behavior does not always conform to the expected behavior of a rational economic agent, and financial assets are not always able to reflect all public information correctly, at all times. Indeed, assets can be mis-priced for a significant period of time, often resulting in bubbles in asset prices that precede a collapse; the technology bubble and the global financial crisis are fairly recent examples of these tendencies.

Violations of the efficient and rational market model have been found to be systematic, robust, and fundamental, suggesting that we may need a new paradigm that reflects investor behavior and how markets actually operate. Indeed, as Shiller observed, there can be periods where it is obvious to some that there is a systemic mis-pricing of asset values, yet such a situation can persist for some time. Indeed, the awareness by some (perhaps the so-called 'smart money') that a mis-pricing exists does not necessarily mean that such a situation will be corrected any time soon. As Shiller noted in relation to over-priced assets in the lead up to the bursting of the technology bubble in 1999/2000:

"Those who doubt the value of these [mis-priced] stocks could try to sell them short…but their willingness to do so is limited, partly since there is always a possibility that the stock would be bid up even further by enthusiastic investors…. Absurd prices sometimes last a long time." Shiller (2005:181)

All of this points to a greater complexity in the investors, as humans that are behind the investment decisions, than the EMH allows for. Indeed, in the context of climate change there appears to be a growing sense of concern and evidence of the potential for some high carbon assets to become stranded or significantly re-priced downwards in view of the emerging policy and technology shifts to support the shift to a low carbon economy. Likewise, many low carbon assets many not have fully priced in their (true) long-term potential upside in a carbon constrained world.

As Highlight 1 suggests, the growing awareness of mis-pricing amongst investors on climate-related impacts is a point of interest to further explore, as it suggests that behavioral drivers might be holding back action. In other words, the limitations to action reflect more than an informational (or reporting) challenge.

Highlight 1. Investors' perception of market mis-pricing of climate risks

Our research explores investors' perception of how well the market is pricing in climate-related risks and opportunities into asset valuations. The *perception* around market pricing is informative as it indicates the extent to which investors believe (or not) there is a persistent market mis-pricing that does not adequately incorporate climate-related impacts.

According to the EMH, a rational response to persistent market mis-pricing would be to exploit or position portfolios to take advantage of that situation. When a mis-pricing persists whilst the awareness of such a situation is building amongst investors, it suggests there are barriers to market re-pricing beyond purely technical or information-based explanations, including cognitive, psychological, cultural, and social influences (Shiller, 2005).

We explored this issue through the interview process by simply asking institutional investors for their views on the extent to which they think the market is [currently] pricing in climate change risks and opportunities into asset valuations and, if not, when they think that tipping point is likely to come.

2.2 Perception of risk

Beyond the volatility of financial returns, investors' perception of risk is also influenced by considerations such as career risk, peer risk, reputation risk – or as Keynes' aptly observed in the beauty context analogy – the fear of being different and being wrong for a considerable period of time, and losing money:

"Worldly wisdom teaches that is it is better for reputation to fail conventionally than to succeed unconventionally." (Keynes, 1936)

In the context of climate change and investment decisions, it is clear that taking a strong stance on the issue and/or adapting investment frameworks that differ considerably from the market consensus view could bring unique risks if such a view does not transpire in the near term.

Indeed, perception of risk has been identified by psychologists and behavioralists as a key driver that impacts an individual's willingness to take action on climate change, both at the conscious and unconscious level. Van der Linden (2017) proposed a useful schematic that attempts to bring the strands of risk perception research together into a unified framework that can be used to measure and operationalize risk perception. This included a distinction between social and personal level judgements (will it impact more broadly, versus am I personally at risk). As Figure 7 summarizes, changing behavior

brings perceived risks that are multi-dimensional (Carvalho, 2010[vi]; Bazerman, 2005; Swim et al[vii], van der Linden, 2017[viii]).

Figure 7. Perceived risks of changing behavior

These are important insights for researching investor behavior and climate change, as perception of risk is a key driver of investor behavior across all investment issues, not only climate change. We built on these insights and developed a number of questions as part of the survey on investor behavior to gauge the perception of risk in relation to climate change (both the perception of risk from taking action, and from not taking action).

2.3 Cognitive biases

Behavioral finance, economic psychology, and related disciplines have identified a large number of cognitive biases that may impact how investors make decisions in reality that further challenge the assumptions of the EMH and rationality. Many, though not all, have relevance for how investors respond to managing climate change risks and opportunities. Four biases that were of particular interest and relevance for this research project on the behavioral barriers to investors taking action on climate change include:

i. Myopia (or short-termism). There is growing evidence and recognition across the investment and regulatory communities that the short-term time horizon of investors and the market more broadly is problematic when addressing systemic issues such as climate change that span multiple horizons[ix]. This will potentially impact agents along the investment chain, including asset managers, asset owners, CIOs, Boards, and Trustees to the extent that short-term performance is given precedence or priority over longer-term outcomes and risks.

ii. The heuristics or rules of thumb tendency to rely on a narrow set of parameters or guideposts to underpin decisions, as researched through the seminal work of Kahneman and Tversky[x] and latterly Thaler who coined the term "choice architecture" where humans prefer simplicity, have a limited attention span and go out of their way to avoid hassles[xi]. This tendency to simplify decisions could potentially thwart efforts to integrate climate change into investment processes. This relates also to narrow framing, where investors seek to reduce the complexity of their decisions, particularly the case for Boards and Trustees where there is limited time when the Board comes together and hence may have less capacity to go deeper into issues such as climate change.

iii. Herding, group think, or gravitation to defensible decisions, where investors have the tendency to mimic the behavior of others and act according to the "rules of the game," whether consciously or unconsciously. As the Keynes beauty contest analogy posited[xii], there is safety in numbers, if everyone gets it wrong then they all go down together, and there is less reputational risk than going alone. To the extent that climate change is not yet 'conventional' amongst investors in terms of day-to-day investment decision-making, it may feel riskier for investors to take decisive action (although it is increasingly becoming part of their rhetoric which is an indicator that change in market conventions and groupthink are underway). This applies to all layers of the investment decision chain. For fund managers and CIOs, it is about potential impact on relative performance against benchmarks and potentially their reputation. For trustees and Boards it is fear of litigation risk, reputation, and/or a performance penalty.

iv. Cognitive dissonance or inconsistency, whereby conflicting attitudes, behaviors, and beliefs produce a feeling of mental discomfort, which can result in an alteration or internal shift in some way (Festinger, 1957). In the context of climate change and investor action, this behavior is highly relevant, particularly as awareness of the scale and magnitude of the challenge continues to spread. However, the emergence of a tension between attitudes and behavior does not automatically mean that decisive action on climate change will emerge. Indeed, when a feeling of discomfort or dissonance arises, there are multiple ways for people to respond, such

as pushing it away, denying it, becoming defensive, or even going back and questioning or placing doubt on the initial cognitive judgement that caused the feeling of discomfort, rather than admitting they were wrong (Schneider, Gruman, & Coutts, 2005)[xiii]. These dynamics are further explored in the context of investor action on climate change in this study, both at the individual level and also the different responses that are emerging across the industry more broadly.

Insights from this research were incorporated into the design of the survey and the semi-structured interview questions to gauge the presence of any of these biases as they relate specifically to investor's ability and/or willingness to take action on climate change.

2.4 Psychological, social and cultural underpinnings

Not all behavioral anomalies can be fully understood by considering individual heuristics, rules of thumb, and other non-random biases. We must also consider the social, societal, organization, political economy, and market-wide contexts in which decisions are being made to fully understand investor behavior. Insights from economic psychologists such as Lewis, Webley, and Furnham (1995) and Lewis (2001) remind us that beliefs and values (that ultimately influence decision-making) are shared with others and are a social, not an individual, phenomenon. Indeed, this was an important observation made by Keynes, namely that decisions to invest are largely governed by the average expectation of the market, rather than the genuine expectation of the investor. Therefore, to reduce and manage uncertainty, investors rely on the maintenance of an industry convention that can be relied upon, even if it sustains unhelpful behaviors and outcomes.

"Thus investment becomes reasonably 'safe' for the individual investor over short periods, and hence over a succession of short periods however many, if he can fairly rely on there being no breakdown in the convention and on his therefore having an opportunity to revise his judgement and change his investment, before there has been time for much to happen. Investment which are 'fixed' for the community are thus made 'liquid' for the individual." (Keynes, 1936:153)

With climate change not yet a 'conventional' and widely accepted core driver of company or asset valuations[xiv], creating a need for affirmation from the wider market around its legitimacy, potentially acting as a barrier to wider integration (until we reach the point of critical mass).

The interdependency between investors, the role of expectations formation, and the influence of others on decision-making as observed by Keynes are all key inputs into our research design. We focus in particular on the conditions that will support behavior and expectations formation that renders climate change 'conventional.'

Norgaard (2010) identified a number of psychological barriers in responding to climate change and classified these in terms of identified barriers versus the underlying drivers. Norgaard focuses in particular on "knowing and not knowing" where society has the information, but most people are not thinking about climate change in their everyday lives. Another wide-ranging review of the psychological, social, and cultural underpinnings that limit climate change action was carried out by the American Psychological Association (Swim et al[xv]), which identified a sequence of barriers as summarized in Highlight 2.

Highlight 2: Psychological, social, and cultural barriers that limit climate change action

- Ignorance and uncertainty – informational barriers, lack of awareness, and underestimation of the risks.
- Mistrust and reactance – people do not trust the message, skeptical.
- Denial – belief that they cannot do anything about it, perhaps a deeper fear of mortality.
- Judgmental discounting – belief that changes can be made in the future or that it is worse elsewhere.
- Habit – this is how we do things around here or I've always done it this way.
- Perceived control – belief that they have little control over the outcome, defeatist.
- Perceived risks – changing behavior brings risks (see perception of risk discussion).
- Tokenism – take some token action, no real meaningful change.
- Social comparison and norms – compare their actions to others (Festinger, 1954), peer norms a strong influence.
- Conflicting goals – having multiple goals and values that are perceived to be conflicting.
- Belief in solutions – belief that others will take care of it, it will be ok.

Source: http://www.apa.org/science/about/publications/climate-change.aspx

Better understanding how investors think about climate change, the underlying psychological drivers to their response, attitudes, and behavior (and the internal consistency or dissonance that exists between these responses) are all vital to better understand the gap between beliefs and action (that go beyond information needs). The internal processes that impact mental models, including the role of attitude, emotion, heuristics (or habits), culture, and norms, are all considerations that have been incorporated into the design of the survey and the interviews, to tease out the presence of some of these effects within the institutional investment community and how it impacts their response to climate change.

2.5 Power relations

The role of different agents along the investment management chain was also incorporated into this study, to consider the different power relations that can could thwart or enable efforts to take action on climate change.

On the question of power, Foucault (1982)[xvi] posited the need "to bring to light power relations, locate their position, and find out their point of application," in particular in the context of a struggle against power (1982:780). Indeed, in the context of the institutional investment environment, there is no one unique role but rather a myriad of roles and functions, some of which are more or less powerful than others. This prevalence of power in itself is not necessarily surprising or of interest; it might appear obvious that such dynamics exist in the investment community. However, the value of such an inquiry in the context of climate change and the role of institutional investors, drawing from Foucault, is to better understand the layers of influence that can determine how different types of investors interact with each other, their behavior, the narrative and script that they follow in their role or function, and indeed, the struggles that might be surfacing in the challenge against existing power dynamics and the status quo.

In order to better understand the crucial role of power dynamics in reinforcing the status quo and causing perhaps unintended behaviors and outcomes, the research set out to examine the different perspectives and inter-relationships between that hold more direct 'power' in over investment decisions compared to the agents that have more indirect influence. The focus in particular in this study is on the behavior and interaction of Trustees, Board members, Chief Investment Officers (CIOs)/lead investment decision-makers, and fund managers (acting for and on behalf of asset owners) with ESG specialists, consultants, advisers, data, and other service providers.

> Power relations are examined to evaluate if any of the behavioral obstacles to climate change action are more or less prevalent at different layers of the investment chain, the role that the different agents play, and how governance structures might be adapted to unlock unhelpful power dynamics and foster the outcomes that are needed to support concerted action on climate change at the organization, industry, and market-wide level.

In designing the survey and 1:1 interview process, it is important to highlight that a balance of funds that might be considered to be more 'leading' and those that are at an earlier stage in their evolution were invited to participate in the research on an anonymous basis. Perhaps unsurprisingly, we found that the less progressed funds were less willing to engage in the research process. It is an important finding in itself that funds that are less progressed on their journey are also more resistant to exploring the behavioral dimensions that might be impacting on their actions at the individual and/or organizational level. This inevitably introduces some degree of bias into the sample and research findings that we made efforts to observe and highlight throughout out analysis

3 Survey design and findings

Building on the insights of the literature as set out in Section 2 as well as design techniques, a survey was developed to gauge and better understand the prevalence of some of the behavioral barriers amongst institutional investors when it comes to taking action on climate change (refer to Annex for survey questions).[xvii]

We distributed the online survey to institutional investors internationally through our social media and industry networks and received 89 responses in total, spread across six regions and all layers of the investment management chain in terms of function (analysts, strategists, portfolio managers, CIOs, CEOs, Board members, trustees, department heads, ESG specialists, advisors, researchers, data providers), including asset owners (29%), asset managers (24%), investment consultants (9%), investment banks (2%), service providers (15%), independent advisors (10%), and other (11%). Two-thirds of respondents were male, one third female, with the median age in the 35-54 range.

The survey responses were analyzed in two phases, first the aggregate (total) sample survey findings were examined (see 3.1 'Overall findings'). Second, the data was examined at the disaggregated level, looking for differences across two cohorts as a way to gain further insight into the power relations within the investment agents (see 3.2 'Power relations findings').

In addition to the aggregate, total sample analysis, the sample was divided into Group 1 'powerful, direct' and Group 2 'less powerful, indirect' categories to test for differences that might emerge in terms of the role and functions within the investment community. The definition of power is based on how

much of an influence an agent has directly on investment decisions (being directly responsible for investment strategy, capital allocation decisions, portfolio management decisions, or in terms of execution and valuation of assets) versus the degree of influence an agent indirectly has on investment decisions (either as a subject specialist, advisor, researcher, where they may influence decisions and outcomes, but are not directly responsible for making them).

3.1 Aggregate survey findings

At the aggregate level, some of the key findings from the survey are summarized in Figure 8, mapped alongside each of the cognitive and psychological underpinnings. After the first profile-based questions, the survey started off by gauging general beliefs about climate change, before moving on to examine more specific considerations to reveal any discrepancies and/or deeper insights into these beliefs in terms of how they might impact on behavior and perception of risk.

Figure 8. Aggregate survey findings

SURVEY	KEY FINDINGS	COGNITIVE BARRIER(S)	PSYCHOLOGICAL UNDERPINNING(S)	QUESTION REFERENCE
Beliefs	There is general acknowledgment of climate change as a systemic risk, but at the day-to-day level, there is a degree of separation from the issue in terms of what that means in practice.	Myopia, cognitive dissonance	Uncertainty, denial, judgmental discounting, perceived control	Question 6, 3
Perceived Difficulty	There is growing effort and momentum in some areas (such as engagement with companies on climate change), yet it is still "not really incorporated into investment analysis."	Narrow framing, heuristics, loss aversion	Habit, conflicting goals	Question 7, 3
Perceived Behavior of Peers	Most respondents do not think their peers are taking strong action on this issue, there is a lack of motivation to act.	Herding, loss aversion	Tokenism and rebound effect, social comparison, norms, and conformity	Question 8, 3

Perceived Difficulty of Specific Actions	There is a degree of resistance to change to existing frameworks, it takes time, energy, and motivation to see it through, which may not be present at the individual level or across organizations.	Heuristics and rules of thumb, anchoring	Habit, perceived risk of taking action, conflicting goals, mistrust, and reactance	Question 9, 3
Perceived Challenges Incorporating into Investment Decisions	Of the three dominant barriers that were identified by respondents, two of them relate to behavioral processes (lack of organization buy-in and perceived complexity) and the third relates to information needs (lack of data).	Status quo bias, cognitive dissonance	Habit, social comparison, norms and conformity	Question 10, 3
Perception of Risk of Taking Action	When it comes to taking action to try to change "the other" (external fund managers or companies), then it is considered to be easier. When it comes to changing their own practices (i.e. valuation frameworks or asset allocation models), then that is considered to be much more difficult.	Status quo bias, narrow framing	Denial, perceived control, perceived risk of taking action, conflicting goals	Question 11, 3
Perception of Risk of NOT Taking Action	Half the respondents believe that failure to act on climate change would not result in a less diversified portfolio.	Over confidence effect	Judgmental discounting, denial, belief in solutions	Question 12, 3

3.1.1 Beliefs

Survey Question 6 was designed to gauge the overall beliefs with respect to climate change and its relative priority in the context of portfolio management decisions.

- There was general agreement that climate change poses a "serious risk that needs to be addressed urgently," with 64% strongly agreeing and 27% agreeing with this statement. Only 1% strongly disagreed.
- Moreover, 72% of respondents strongly agree that "taking action now will reduce future costs," with only 2% strongly disagreeing with this statement.
- There was general agreement also that investors can do something about this, with 90% of respondents either strongly agreeing or agreeing that climate change "provides new opportunities for investors."
- Nearly 90% of respondents disagreed or strongly disagreed with the statement that climate change "is too far into the future to assess" or that "there is little that investors can realistically do about the issue."
- The response to the statement that "there are more pressing issues to address" than climate change generated a more mixed view, with around a third neither agreeing nor disagreeing with this statement.

On the face of it, these results are very favorable and indicative of support for climate change action. This could be due to a selection bias to the respondents (where the respondents that completed the survey on balance also held a more supportive view of climate change). It could also be the first insight into revealing a possible gap between beliefs and behaviors and the emergence of cognitive dissonance which we further examine.

When we examined the open-ended responses to Question 6, we observed layers of complexity to explain the responses that suggested the beliefs might not be as straightforward as initially suggested. For example, there was mention of a "tension" that existed in acting on long-term, chronic issues such as climate change. While it was seen as a "top five" issue, by another, there are multiple and "equally pressing" issues that also need to be addressed. One even went as far to say that:

"…From the perspective of running our pension fund on a day-to-day basis, it can seem like this issue can wait."

We can see the prevalence of "knowing and not knowing" (Norgaard, 2010) and inconsistency reveal itself. Yes, there is general acknowledgment of climate change as a systemic risk, but in practice at the day-to-day level, there is a degree of separation from the issue in terms of what that means in practice. This observed prevalence of cognitive dissonance produces many potential consequences in terms of understanding the barriers and shifting investor behavior that are further examined.

3.1.2 Perceived difficulty

Survey Question 7 focused on the perceived level of difficulty associated with incorporating climate change into investment frameworks, to gain insight into the role that mental models, heuristics, and rules of thumb play in taking action on climate change.

- The majority of respondents (45%) reportedly felt that "incorporating climate change into investment frameworks" was either difficult or very difficult. Around a third felt that it was neither easy nor difficult, with only 3% thinking it was very easy.

- So, while in the previous question it seemed that the majority of respondents felt that climate change could be acted upon, that it presented both opportunities and risks that could be managed today, when taken further, it seems that people think this is quite difficult to do (albeit not impossible).

Interestingly, the responses to the open-ended component of this question revealed an array of perspectives. We are seeing much more diversity in thinking already from the preceding question. For example, where external drivers were seen to be the most important difficulty with taking action by some (citing lack of regulations, information, data, tools), others pointed to internal drivers, observing that it is "hard" to change existing frameworks in large organizations and that the:

"…tools exist, motivation tends to be the primary obstacle."

Another respondent observed that:

"…existing frameworks have often developed over time, and so may require retooling, which can be labor intensive. Equally, adopting a single approach across sectors can be hard, particularly in large organizations."

These insights suggest that there is a degree of resistance to change to existing frameworks. It takes time and energy and motivation to see it through, which may not be present. No amount of new tools or data will (in itself) address this obstacle. This is a barrier related to internal change at the individual (whether motivation exists) and organization levels (the effort needed to review existing frameworks). An expansion of heuristics and rules of thumb that embeds climate change will take conscious effort, time, and motivation. Clearly some of the respondents felt that the tools were developing to support this shift. Others pointed to the internal challenges such as the level of commitment and effort needed to utilize these tools and do it (according to one respondent) "100%."

3.1.3 Perceived behavior of peers

Survey Question 8 considered the extent to which investors felt that their peers were taking action on climate change, to gain insight into the behavioral tendency towards herding and to compare oneself to others, to feel more comfortable taking action that is perceived to be conventional.

- The majority of respondents (65%) felt that "climate change was being addressed by other investors," including peers, 'to a very little' or 'somewhat' extent. Only 1% thought that is was being addressed to a 'great' extent.

- This lack of peer pressure or sense that other investors are not really taking strong action on climate change will also undermine the willingness and motivation to take action.

Indeed, some of the open-ended responses pointed out that while there is growing effort and momentum across the industry and amongst their peers around some approaches (such as engagement with companies), many felt that climate change is:

"…not really incorporated into investment analysis."

While some noted that there is more attention and talk about climate change, there is still:

"…not a lot of internal capabilities that would amount to serious action."

There appears to be a general perception that the industry momentum on climate change and level of activity amongst peers has not resulted in meaningful change in terms of integration into investment analysis or building internal capabilities to take 'serious action.' This will be further explored through the interview process, as a lack of perceived 'serious action' by peers could undermine the motivation for some investors to review their own internal planning, prioritization, and climate-related actions.

3.1.4 Perceived difficulty of specific actions

Building on Question 7, Question 9 made efforts to go further to gauge attitudes towards specific actions that can be taken with respect to climate change.

- The most revealing insight from this question was that some activities were considered by most (more than 70% of respondents) to be either very easy or easy, namely engaging with external managers, engaging with companies, and investing in low carbon opportunities.
- On the other end of the spectrum, integrating climate change into valuations, undertaking scenario analysis, and reviewing asset allocation assumptions were identified as the most difficult or very difficult actions to take by more than 60% of respondents.

This suggests that when it comes to taking action to try to change "the other" (external fund managers or companies), then it is considered to be easier. When it comes to changing themselves (i.e. their valuation frameworks or asset allocation models), then that is considered to be much more difficult. For example, one respondent noted that:

"…it is easy to incorporate but harder to actually implement climate change strategies into investment frameworks."

Another observed the difference layers of integration:

"I think [climate change] is addressed by engagement but not really incorporated in investment analysis."

With another suggesting that collective action is preferable:

"…it is a complex challenge and requires a broad range of responses….it is a collective action problem so success is not within the control of any individual fund."

The survey results suggest that collective action is preferable to action at the individual fund level, perhaps explaining the support for engagement strategies together with other investors as a way to take action without actually questioning or changing the mental models and frameworks that are heavily relied upon inside organizations. It also points to the potential prevalence of the status quo bias in terms of investors resisting change to their own frameworks versus greater support and willingness to take action to change "the other."

3.1.5 Perceived challenges with incorporating into investment decisions

Survey Question 10 provided respondents with the opportunity to self-identify with a list of potential challenges that include both external and internal dimensions. It was designed to gain further insight into the way investors think about climate change and what might be impacting their ability and/or willingness to integrate it into investment decisions.

- The factors that were identified by respondents as being the most important challenges that they faced were threefold, namely: 1) "lack of comparable data" (with 60% of respondents pointing to this as being an important or very important challenge); 2) "the lack of internal buy-in" within their organization (more than 55% identifying this as being an important or very important factor); and the "high degree of complexity" that managing climate change involves (more than 50% ranked as important or very important).

Interestingly, of the three dominant challenges that were identified by respondents, two of them relate to internal processes (lack of buy-in and perceived complexity) and the third relates to external forces (lack of data). This highlights the important role that behavioral analysis and internal processes can play in assessing and overcoming the impediments to taking action on climate change; alongside improving access to data and tools, reducing perceived complexity and implementing processes to support organization-wide buy-in will enhance the potential utilization of such data and tools.

The open-ended responses also revealed some commonalities that pointed to the lack of industry norms/conventions that incorporate climate change impacts. For example, one respondent stated that:

"…lack of comparable data is not as much of a challenge as lack of an industry standard."

With others stating that:

"…the greatest challenge is a behavioral one, challenging the status quo and vested interests."

With such insights and awareness of the inner drivers and behavioral obstacles apparently prevalent from within the investment community, it is somewhat perplexing that these issues have not been more explicitly researched and focused on as part of scaling up investor action on climate change. It might not be as straightforward (or perhaps as commercially appealing) as building new tools and databases, but it is clearly essential.

3.1.6 Perception of risk of taking action

Survey Question 11 set out a number of possible responses to gauge investors' perceived "risks associated with integrating climate-related impacts into investment decisions."

- The highest rated risks associated with integrating climate change into investment decisions included: 1) too complex to evaluate (30% of respondents); 2) time and resource intensive (32% of respondents); 3) not well entrenched across the industry (28% of respondents); and 4) hard to defend if it goes wrong (27% of respondents).

- On the other end of the spectrum, the potential risk of breaching fiduciary duty was rated as not a risk or a low risk by more than 70% of respondents, suggesting that this is not acting as a perceived barrier to action. Getting fired and/or a lower bonus was also quite low on the level of concern, with 67% of respondents putting this as a very low or low risk in terms of taking action on climate change.

One respondent did highlight the potential impact of short time horizons and the impact that can have on behavior, noting that:

"The issue I believe is that Funds are measured over a relative short period. The impact of legislative change is often not immediate. Therefore, Funds can invest and exist before value is affected."

Another highlighted the potential impact on performance and time horizon, noting that:

"By the time performance risk is material and visible to investors it might be too late for us as a global society to stabilize the climate."

The responses to this question suggest that the industry needs to focus on reducing the perceived complexity of taking action on climate change, through allocating more resources to the issue and developing more industry-wide standards that, in turn, make it easier to defend if "it goes wrong." In addition, there is a perceived need (by some respondents) for investors to take pre-emptive action, not to wait until the signs of climate change are visible and self-evident, but to price the risk ahead of that point as part of a system-wide risk mitigation strategy.

3.1.7 Perception of risk of NOT taking action

In contrast to the previous question, survey Question 12 set out a number of possible responses to gauge investors' perceived "risks associated with NOT integrating climate-related impacts into investment decisions."

- Interestingly, there was more dispersion in the responses to this question than in the previous one, indicating that when it comes to not taking action, there is less consensus on what that means (compared to the risks of actually taking action).
- There were five risks that stood out as posing more concern amongst the majority of respondents than others in terms of not taking action on climate change, these being: 1) reputation risk of not acting (50% of respondents); 2) losing leadership status (52% of respondents); 3) missing out on new opportunities (50% of respondents); 4) higher system-wide risks (54% of respondents); and 5) weak signals for companies and governments to act (60% of respondents).

These findings suggest that the perceived risk of not taking action is more likely to impact reputation and status in the industry, rather than negatively impacting performance (whereas taking action in the previous question led to some fear of the negative performance implications).

Indeed, half the respondents did not think that failure to act on climate change would result in a less diversified portfolio (50% ranking this as not a risk or a very low risk). Clearly there is an element of consistency on this point that needs to be further explored, as the majority of respondents reportedly saw climate change as a major systemic risk that needed to be managed (Question 6), yet at the same time half of the respondents think that this will not impact portfolio diversification. This appears to suggest cognitive dissonance is present, leading to denial of the potential portfolio risks of not taking action.

This could be underpinned by confirmation bias, where existing models and frameworks that are used to evaluate portfolio diversification are not reviewed in light of climate change. Rather, the more convenient conclusion (that confirms the reliance on current frameworks) is that portfolio resilience will not be impacted.

3.1.8 Open-ended responses

At the end of the survey, a space was provided for open-ended comments or insights on this topic more generally, generating a high number of entries by respondents (26 of the 89 respondents offered additional comments); which provided a useful insights for our analysis and guidance as we prepared for the interview stage of the research.

- One respondent noted that "a huge part of the problem is changing mindsets." Another stated that "culture is critical" and that the "culture of the investment community" needs to evolve. One respondent claimed we are in the midst of a "moral crisis."
    - This confirms our efforts in this project to focus on behaviors and their drivers, including dominant mindsets, values, and culture.
- Other respondents point to resourcing issues internally, where "time and resource shortages are often quite acute."
    - This reaffirms the survey findings that internal buy-in at the organization-wide level is needed to help prioritize the issue and also overcome the internal barriers that may slow down action.
- Another respondent noted that the main problem was that "Funds are measured over a relatively short period…Funds can invest and exit before value is affected." Another noted that by the time climate risk is "visible to investors," it might be "too late for us as a global society to stabilize the climate."
    - The notion of tragedy of the horizons emerged mostly strongly in the open-ended responses and throughout the interview process. Interestingly, short-termism is not something that the respondents felt that they were personally contributing to. It appeared to be a problem with "the market" or "others," rather than themselves.
- Other respondents highlighted the importance of policy and regulations to spur action, with one stating that "it should be mainly regulation led in the end" and another noting that "nothing has driven change quite like the regulator incorporating climate change into new requirements in the UK." Another noted that "without a price on carbon, the risks are hard to assess and progress is likely to remain too slow."
    - This framing of the issue is more typical of how the investment community talks about climate change barriers to action. It relies on change to the "external" conditions rather than to "internal" processes or ways of thinking. Ideally, regulatory change that also seeks to reflect the drivers of behavior, culture, and mindsets would help to bring the 'internal' cognitive processes closer in alignment with the 'external' conditions to support greater climate action amongst investors.

3.2 Power relations findings

In addition to the overall findings, we divided up the survey respondents into Group 1 'powerful, direct' and Group 2 'less powerful, indirect' categories to look for any differences that might emerge in terms of the roles and functions within the investment community. The aim was to further explore the emergence of the tension that we observed at the total sample level and the potential role that cognitive dissonance might play in explaining and understanding our findings.

For the purposes of our research, the definition of power is based on how much influence an agent has directly on investment decisions (being directly responsible for investment strategy, capital allocation decisions, portfolio management decisions, or in terms of execution and valuation of assets) versus the degree of influence an agent indirectly has on investment decisions (either as a subject specialist, advisor, or researcher, where they may influence decisions and outcomes, but are not directly responsible formaking them).

- Group 1 – Powerful, direct – defined in this study to include Chief Investment Officers, Chief Executive Officers, asset allocation strategists, board members, trustees, general manager of investments, heads of division/department, portfolio managers, investment analysts.
    - Group 1 sample size was 42 respondents, representing 47% of the total sample size of 89.
- Group 2 – Less powerful, Indirect – defined in this study to include ESG/sustainability specialists, consultants, specialist advisors, independent researchers, data/analytics providers, industry associations, or news service providers.
    - Group 2 sample size was 47 respondents, representing 52% of the total sample size of 89.

We acknowledge that these definitions might be challenged by some. For example, if we were to conduct the analysis at the organization level and consider the individual governance model of each fund, the 'less powerful' might be more directly influential on investment decisions than we have assumed (consultants and ESG specialists, for example). Nevertheless, based on our experience working inside investment organizations, advising them on these issues and interacting with a wide range of organizations on this topic for a number of years, we concluded that these categorizations at the industry level were reasonable.

Figure 9 summarizes the key findings based on the disaggregated analysis of Group 1 versus Group 2 behaviors with respect to climate change, along with a summary of the evidence.

A higher score means responses were more favorable with respect to taking action on climate change (less prone to biases and psychological barriers) versus lower scores where responses were less favorable (more prone to biases and psychological barriers).

Figure 9. Power relations findings

OVERALL FINDINGS	EVIDENCE
Powerful agent respondents demonstrated a higher tendency towards behavioral biases that limit climate action compared to less powerful agents.	Group 1 scored lower than Group 2 overall and also showed a higher dispersion in views than Group 2. This overall difference between Group 1 and 2 was found to be statistically significant.
Powerful agent respondents are predominantly male.	Group 1 has a much higher proportion of male to female compared to Group 2, which was more evenly split by gender.
Male respondents demonstrated a higher tendency towards behavioral biases that limit climate action compared to females.	Gender differences were found to be statistically significant, with females having a higher score than males.
Powerful agent respondents tended to be (on average) older than less powerful agents.	Group 1 had a higher proportion of respondents aged 55 years and over than Group 2 respondents, although the difference was not found to be statistically significant.
Older respondents demonstrated a higher tendency towards behavioral biases that limit climate action compared to younger respondents.	Those aged 55 years or less were found to score more highly than those 55 years and over on a number of areas. The age difference was found to be statistically significant on Question 7 (existing investment frameworks), where older respondents demonstrated less willingness to change and adapt frameworks compared to younger respondents. Furthermore, Question 12 found a statistically significant difference between age groups where younger respondents had a stronger view that NOT incorporating climate change into investment decisions posed a significant investment risk.
Powerful agent respondents find integrating climate change into valuations more challenging than less powerful agents.	Group 1 believes that integrating climate change into valuations was more difficult compared to the beliefs held by Group 2. Response to Question 9 on integrating climate change into valuations found a statistically significant difference in responses between Group 1 and Group 2, with Group 1 scoring lower than Group 2.

Powerful agent respondents feel more constrained by existing investment frameworks than less powerful agents.	Group 1 was found to be more influenced (and constrained) by heuristics/existing industry practice and existing frameworks than Group 2. Response to Question 10 on climate change not being part of standard industry practice found a statistically significant difference in responses between Group 1 and Group 2, with Group 1 scoring lower than Group 2.
Powerful agent respondents feel more constrained by fiduciary duty than less powerful agents.	Group 1 was found to be less convinced that climate change action is compatible with fiduciary duty than Group 2. Response to Question 11 on climate change integration being compatible with fiduciary duty found a statistically significant difference in responses between Group 1 and Group 2, with Group 1 scoring lower than Group 2
Powerful agent respondents have a higher tendency to conform to industry norms (and herding) than less powerful agents.	Group 1 had a higher tendency towards herding (preferring that which is well entrenched) than Group 2. Response to Question 11 on climate change not being well entrenched across the industry found a statistically significant difference in responses between Group 1 and Group 2, with Group 1 scoring lower than Group 2.

In summing up the power relations analysis, the findings suggest that there is a difference between those agents that have more direct responsibility for investment decisions (defined in this study as 'powerful' agents), compared to those that have more indirect influence (defined as 'less powerful' agents). This difference was not only found to be statistically significant at the total sample level, but it was also significant when some of the individual biases and drivers were examined, with Group 1 scoring lower than Group 2.

The results also suggest that Group 1 respondents were more likely to find it difficult to integrate climate change into valuations, to see how it fits into existing frameworks and investment practices, and its compatibility with fiduciary duty, compared to Group 2 respondents who scored more highly across all of these dimensions (where the differences were also found to be statistically significant).

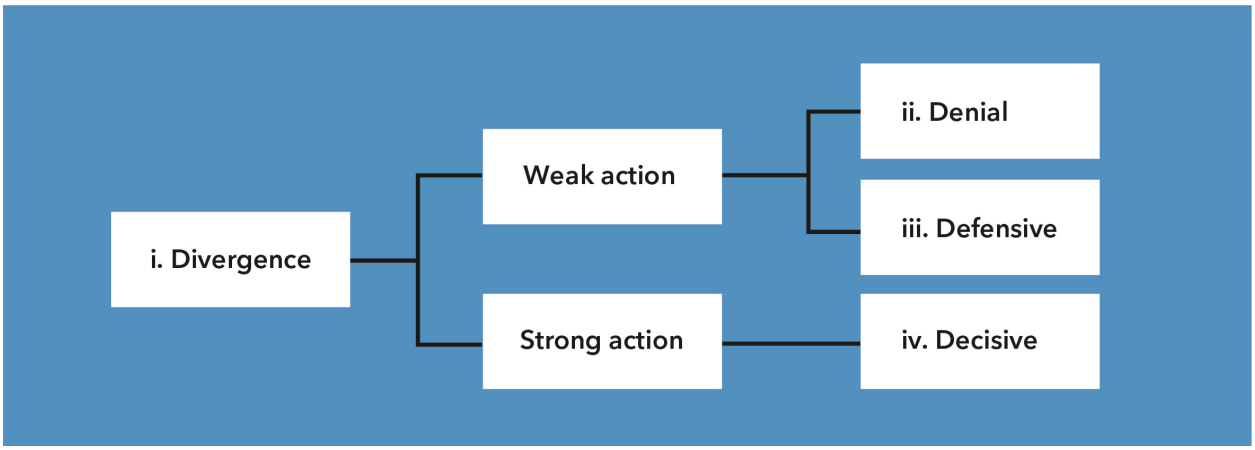
A closer examination of the survey respondents that made up Group 1 and Group 2 shows that there is a dominance of male versus female in Group 1, and an average age that is also older in Group 1 than Group 2. This has potential implications not only for communication and messaging to different investment agents, but also for governance and diversity inside investment organizations themselves at all layers of the decision-making processes.

3.3 Cognitive dissonance

The disaggregated analysis of the survey responses also points to evidence of a growing dislocation within the investment community, suggesting that there is a fragmentation of culture emerging which could potentially help to destabilize the status quo and allow new perspectives to filter through the system.

To analyze this fragmentation we categorized the survey responses in terms of: i) Divergence within the investment community; ii) Denial of an internal inconsistency; iii) Defensiveness to justify the internal inconsistency; iv) Decisiveness amongst some, to taking strong action on climate change (Figure 10).

Figure 10: Cognitive dissonance processes of investors with respect to climate change



I. **Divergence** – Views within the investment community on what investor actions should be taken now in response to climate change are increasingly divergent.

While we found evidence of a generally accepted awareness and level of concern about climate change at the system-wide level amongst investors, we also discovered a divergence in opinions about what that means in practice at the individual level. There is a sub-set of investors (Group 2) that have more strongly held beliefs and conviction than others, who are increasingly frustrated at the level of inaction (in this case, frustration at Group 1).

There is a tension between "them and us," with the "them" being the power agents (Group 1) and the "us" being the less powerful but highly motivated (Group 2).

Some of the open-ended responses from Group 2 provided below highlight this emerging tension. For example, some comments that were made about senior investors inside organizations were:

> *"…too many excuses, a lot of talk but very little action. It should be mainly regulation led in the end."*
>
> *"…for the most part [they] are simply paying lip service to it…"*
>
> *"…the clever young Turks should oust the lazy old lions..."*

Ii. **Defensiveness** – Group 1 investors appear to be less willing to take strong action now. They rely more heavily on perceived complexity to justify their position to themselves and to others.

Comments such as "*dealing with the here and now*" and "*managing as best we can with The information we have*" were the type of justifications that these investors gave for their more muted response.

One respondent noted that (underline added for emphasis):

"…can realistically do is not the same as will realistically do…"

This suggests a level of awareness of the apparent gap between attitudes and behaviors, described as potential action and actual action. While action might be possible, there are all sorts of reasons why is might not be 'realistic' to go further,

Iii. **Denial** – Although Group 1 acknowledge that climate change exists and revealed their concern at the system-wide level, they demonstrated a degree of denial and disconnection from the issue in terms of its direct relevance to their day job.

This was revealed in the survey analysis on perception of risk from taking action (or not) on climate change, where we found that Group 1 tended to see lower risks in not taking action on climate change than Group 2. In particular, there was a fairly strong view expressed amongst this group of investors that not taking action would not adversely impact portfolio resilience and/or diversification.

As one Group 1 respondent noted:

"This is a top five issue, but the plan faces multiple equally pressing issues."

The belief that climate change is an issue that sits alongside others, rather than representing a systemic risk of major proportions, reflects an element of denial of the evidence and also a denial of their own attitude where almost all respondents highlighted it as a risk that needed to be managed with urgency (at the system-wide level).

This tendency to disconnect from climate change at the individual (firm or organization) level confirms existing research that points to a higher disconnection amongst those who feel they are a few steps removed from the brunt of the actual outcomes of climate change on them personally (Norgaard, 2010). In the caseof our study, this disconnect manifests in terms of perceived threat (or not) to portfolio resilience and financial performance.

iv. **Decisiveness** – Group 2 investors tended to have very strong views in favor of immediate and strong climate action.

Group 2 were found to have stronger views on climate change, were less prone to cognitive biases and psychological barriers that thwarted their efforts, and were more willing to take action now. They demonstrated a strong motivation to act now, referred less to tools, data, and information limitations, and more about conviction, consistency, trust, and building strong relationships to support and underpin their efforts.

This group has overcome the cognitive dissonance and come out the other side internally with a clear drive to take action. The challenge for this group appears to be more related to managing a sense of frustration that they are insiders to the investment industry and they have a role to play, but their efforts are being undermined by the actions (or rather inaction) of others.

Other respondents from Group 2 noted that:

> *"Incorporation [of climate change] should be viewed as essential and require commitment to the necessary capacity building."*
>
> *"Institutions have other priorities where unhappily the means justify any way to reach them."*
>
> *"Too many influential asset owners and asset managers sit on the fence with enormous capital destruction looming."*
>
> *"I see climate change as posing global catastrophic dangers…while institutional investors have at their disposal substantial power to lead vital change through concerted political and financial engagement, this power must be more fully effectuated."*

Evidently Group 2 respondents speak about climate change in a decisive way, there is little uncertainty as to how big the issue or challenge is, and also a clear demonstration of emotion and frustration at the lack of action. The "them and us" and why "they" should be doing more is also self-evident in terms of how they describe the issue. The notion of power in the last statement also lends weight to our analysis to better understand the role of that dynamic within the institutional investor context.

This framework and evidence of cognitive dissonance could potentially support a theory of change, where the greater the divergence within the investment community, the harder it will be for resistant investors to continue responding to the prevalence of dissonance through denial or defensiveness. Not only will their own tribe feel like it is turning against them, the external pressure from their peers, beneficiaries, society (including new voices in the youth movement), regulators, NGOs, and other stakeholder groups will also add to the growing feeling of discomfort with existing positions and responses.

4 Interview design and findings

4.1 Interview design

The second research method for the project was to carry out a series of semi-structured 1:1 interviews with individuals inside asset owner organizations that represent Group 1 (powerful agents) as defined in this study. The aim of the interviews was to follow up on the survey findings that indicated the behavioral barriers to taking action on climate change is stronger amongst this group, compared to Group 2 (less powerful agents).

A series of questions were developed to guide the interview process, although the approach taken was very much a semi-structured conversation as it was important to create an atmosphere of openness and trust, to better understand the issues from the perspective of the interviewees themselves on the links between real investor drivers and the underlying barriers to climate action. Indeed, the questions were not followed rigidly as the interviewees all had different perspectives on climate change and its implications for investment decisions, so this required judgement as to how best to ask and prioritize the questions in order to better understand their perspective.

To encourage the Group 1 individuals to participate in the interview process, a project summary was prepared and sent as part of the invitation. Existing relationships with the individuals inside these organizations was important and there was certainly some selection bias in the interview list as we discovered that individuals inside organizations that were less 'progressed' in their thinking and actions on climate change were more reluctant to participate in the research.

The reality is that existing leaders are far more prepared to talk about the barriers (and how they overcame them or are managing them presently) than less progressed investors who could feel more threatened or uncomfortable with discussing the challenges of taking action on climate change. More broadly, this is a challenge with any behavioral research undertaken on 'real world' people versus experimental or more theoretical approaches in the academic context.

With this sample bias in mind, the strategy that was adopted throughout the interview process was one of understanding the perspective of the interviewees, the challenges that they have with respect to taking action on climate change, how they manage and respond to these, and how they see things evolving going forward. These insights from senior executives inside asset owner organizations are valuable to not only understand what strategies they employed to overcome some of the challenges that they encountered, but also to share these insights with other organizations that are less progressed on the journey. In this way, the herding tendency that was observed at the survey level could be a force for change, where the leading funds can help to pave the way for other investors to follow suit and evolve their own internal processes with respect to climate change. The power of the pack in challenging groupthink and industry norms is key[xviii].

Against that backdrop, a total of eight teleconference interviews were carried out with individuals from different asset owner organizations, seven of which represented Group 1 (powerful as defined in this study) executives at the CEO/CIO/Trustee level, and one represented a Group 2 (less powerful as

defined in this study) senior responsible investment executive. All interviewees were promised anonymity to encourage an open and frank dialogue.

4.2 Interview findings

4.2.1 Overall themes

During the interviews there were a number of themes that emerged in terms of how individuals in senior positions inside asset owner organizations have personally experienced the challenges with incorporating climate change into investment processes (n.b. italics indicate direct quotation from interviewees).

Informational versus behavioral barriers: No interviewees felt that the challenges with taking action on climate change was purely due to lack of data or availability of models – or even policy or technology breakthroughs – all the interviewees talked about the importance of people, trust, and personal relationships inside their organizations. This is a key finding.

- Indeed, according to many of the interviewees, the volume of real-world evidence in policy, technology, weather, and science is helping to break down the barriers for not taking action.
- One interviewee noted, *"When towns start shutting down because of extreme weather, then surely that will change things. We are all going to die if we don't do anything, it's a scary trend."*
- Another interviewee noted the importance of the human dimension to investment, stating that *"Performance is achieved by individuals not by models."*

Beliefs: Personal belief provided a lot of the determination to do something different from their peers – not a moral or ethical belief, but one steeped in the belief that climate change is not going away, and that mitigation is the logical thing to do.

- Indeed, many of the interviewees indicated that most barriers have been overcome by a firm belief that this is happening and that the transition is inevitable.
- Leaders have a conviction that they will be rewarded at some point, though they don't know when.
- All interviewees thought incentives were important but stressed it's more about the beliefs than incentives.
- One interviewee highlighted that conviction is key, noting that *"Our conviction that we are right on climate is stronger than our fear of failure."*

Trust: Strong overall fund/individual performance is a key element that allowed an individual to drive a proactive climate agenda and develop a strategy. This performance creates trust from

the board that allows the board to overcome any fears about risk in being unique or proactive over climate.

- Trust is key not only for approval of a climate change strategy, but also to provide the delegated authority to implement it.
- One interviewee noted that *"The decision-making on how we implement the sustainable investing framework is ours – the board agree the framework and trust me to make the investments and they hold me accountable for those investment".*
- *"You need the CEO and CIO to have the mandate and trust from the board."*

Culture: Pressure on C-suite executives from even one or two board members is helpful to open up a dialogue on the issue, building a culture that embraces change and ultimately drives action.

- To ensure positive climate behavior, leaders emphasized the importance of having a culture that promotes and encourages people to do things differently.
- Some leaders experienced early resistance from colleagues and board members. They thought it was making their life harder, e.g. by implementing new benchmarks. However, it was explained that once the resisters (internally at the Board and executive level) had a chance to be heard, they were less resistant. As one interviewee noted *"Once they had a chance to report their stance, they had an outlet, felt less sidelined and more listened to".*
- Some simple processes can help overcome behavioral barriers such as focusing board conversations on 10 year returns rather than annual returns and performance on league tables.

Perception of risk: The interviewees all felt that the degree of financial risk to become a leader was small. This is understood by the leaders who can allocate capital to low carbon assets and still take minimal career or reputational risk.

- One interviewee noted that rather than being afraid of moving ahead of consensus opinion, this can actually work in favor of investment outcomes. *"There is a first mover advantage. Risk adjusted returns are better if you go first."*
- Another interviewee explained the dynamic process and how perception of risk can change over time in regard to climate change. *"We saw our property portfolio lagging and thought maybe it was the green policies affecting performance. When we looked at it we could see it wasn't that but other sector drivers and forces. It then rebounded well and we used it as an example to demonstrate to the board we needed to hold our nerve on sustainability."*

Finding the comfort zone: There was some evidence of anchoring amongst the interviewees to what they feel most comfortable with. Most explained that it is far easier to expand a fund's climate strategy and invest in low carbon opportunities if the returns from existing investments

are reasonable. According to most of the interviewees, the returns don't have to be higher than other areas, just comparable to other opportunities in similar asset classes.

- One interviewee noted that *"other types of investments, not necessarily climate related, which have bounced back after poor periods, provide a good precedent for maintaining faith in an existing climate strategy."*
- Almost all the interviewees didn't believe in divestment or negative screening.
- As another interviewee noted, it is important to build a track record and knowledge over time for credibility and to reduce the difficulty of building a new program of investments, as *"CEO and CIOs can only allocate internal credibility effort to a certain number of issues."*
- Overall fund performance is critical to acting, as one interviewee noted on performance. *"Being a good performing fund is important to being able to act on climate. 4th quartile investors don't want to take risks – they will head to a 3 year middle of the pack herd position to get themselves back up the ranking".*

Reluctance to forecast: Even the more progressive asset owners amongst those interviewed in this research have not gone as far as developing a public "base case" expectation for climate change yet, as they have been able to act without having to do this.

- Our discussions indicated that to develop a fully fledged "Paris-aligned" base case would be to take a very big bet that most interviewees were reluctant to take. However, one CEO was so convinced about the future costs that will arise in the transition to a low carbon economy that he implemented fossil fuel free benchmarks across the entire equity portfolio. *"I put our forecast base case before the board and they asked if I could guarantee that all my facts and figures were right and of course I could not, and you never can, but they only ask this when you are trying to do something that your peers are not."*
- The uncertainty around timing and reluctance to take a strong view or forecast the trajectory of climate change (and when the tipping point will be reached) is revealed as one interviewee explained that *"I think it has to flip in the next five years, but I've been wrong before. If you asked me 30, 20, 10 years, etc., you would have thought it would be sorted, but we don't seem to be getting closer. It is impossible to tell when the tipping point might be. If I'd taken that view over the last 30 years, I would have been consistently wrong".*

Peers: Rather than feeling pressure to stay in the pack and not go too far from the 'norm,' the leaders were often disparaging of peers who had failed to see the obvious risks or who were unwilling to overcome any fears or biases in order to act on climate change.

- All interviewees recognized in their peers that it is easier to find reasons not to do something.

- One interviewee was *"Amazed that most CEOs of pension funds are more scared of doing wrong than taking risk and moving the needle."*
- Another stated that *"The challenge with this industry is that 99% of people just want to follow. Trying to do things you believe in has very little upside in our industry. People who have jobs like I do just get comfortable and want to clip their annuity at the end of the day."*
- There was also a sense of the wider benefits in collaboration. For example, joining low carbon investing partnerships was seen by some interviewees as a good way to overcome barriers as others feel collective risk is being taken.

External pressure: Our discussions indicated that external pressures from beneficiaries/members, employers, regulators, NGOs, or the media to take action can be effective at overcoming behavioral barriers and helping to prioritize climate change internally across asset owners' executive functions.

- On the flipside, public scrutiny can also increase risk aversion amongst some Board members and create a fear of going too far on an issue and getting it wrong. For example, one interviewee stated, *"I submitted a plan for low carbon investment and the board asked me what will I tell the journalists if I get this wrong?"*
- Another interviewee also noted the role of external advisors, and how this can present a challenge if the consultants (for example) are not fully supportive of taking action on climate change. *"It is easy for anybody along the way that wants to sow seeds of doubt – consultants for instance can always come up with reasons not to do it."*

4.2.2 Leaders and biases

With acknowledgement of the inherent selection bias in the interviewees, some of the most surprising findings concerned behavioral biases that we had anticipated in our analysis but actually hadn't shown up in interviews. The absence of many of these biases in leaders was perhaps the most important finding in the entire study in that it demonstrates that with some effort and attention, these biases are not a 'given' and can be overcome. Indeed, these insights will help to guide further efforts to design solutions and alter the framing of climate change inside the executive of asset owner organizations as a way to overcome the biases that may prevail outside of the so-called 'leading' community of investors. For example:

- Base rate neglect (the bias towards more detailed information and ignoring broader information) was not strong. We had anticipated that a lack of detail on issues like clean investment returns would be a barrier, but it wasn't – it was overcome by more positive influences such as trust from a board in the CIO or CEO and/or a track record.

- Full divestment was not considered by any of the funds. This was cited for technical reasons though some anchoring bias (the tendency to rely too heavily, or "anchor", on one trait or the first pieces of information when making decisions) was present, believing traditional

diversification was necessary in the absence of other information. There was no understanding of Grantham's sector analysis to question that position.

- There was also a lack of availability heuristic (the tendency to overestimate the likelihood of events with greater "availability" in memory, which can be influenced by how recent the memories are or how unusual or emotionally charged they may be rather than unknown or uncertain data) amongst leaders – they had gone searching for climate opportunities and so had overcome any disposition to lower the probability for the climate transition.

- There was also a lack of sub-additivity effect (the tendency to judge probability of the whole to be less than the probabilities of the parts) and zero risk bias (reducing low probability risks from small to zero.) – the leaders are so convinced about the inevitability that they have used individual probability components (clean technology, rising extreme weather events, policy momentum, investor leadership) to reinforce their positions.

- However, even amongst leaders there was some normalcy bias (the refusal to plan for, or react to, a disaster which has never happened before) as none had thought seriously about a highly volatile climate transition point even though their actions were trending towards a more progressive climate position – thus the behaviors are an element of degree to some extent.

- A lack of cognitive dissonance was generally apparent amongst clearer leaders – it wasn't ethically or morally driven action even when they felt morally aggrieved at the lack of action elsewhere. They simply had a belief that climate change was real, happening and guaranteed to accelerate making their decision to act justified. However, some interviewees also displayed dissonance in recognizing the importance of climate change but limiting their response to tackling it, admitting that they were 'dabbling at the edges of action.'

- There was no evidence of the law of the instrument (an over-reliance on a familiar tool or methods, ignoring or under-valuing alternative approaches, e.g. "If all you have is a hammer, everything looks like a nail"). None used traditional reliance on strategic asset allocation models, value at risk, modern portfolio theory, or efficient market hypothesis in their thinking – in fact, all were convinced that markets had got it wrong.

- As a tactic, leaders who created a broad framework for climate first based on beliefs or similar governance elements allowed doubters to align with the climate strategy before approving the specifics on investments.

[i] See for example the Long Term Investors Club (http://www.ltic.org); and the Focusing Capital on the Long Term initiative (https://www.fcltglobal.org/)

[ii] http://sabeconomics.org/wordpress/wp-content/uploads/JBEP-2-1-8.pdf

[iii] Simon, H. A. (1982). Models of bounded rationality. Cambridge, MA: MIT Press. Rationality is bounded because there are limits to our thinking capacity, available information, and time (Simon, 1982)

[iv] Asset owners include pension funds, superannuation funds, insurance companies, charities and endowments

[v] See for example Critchlow, K, Irrational Apathy: Investigating behavioural economic explanations for the Carbon Bubble, (unpublished Masters thesis)

[vi] A. Carvalho, Climate change as a 'grand narrative', Jcom 09(04) (2010) C03

[vii] http://www.apa.org/science/about/publications/climate-change.aspx

[viii] Van der Linden, S, 2017, Determinants and Measurement of Climate Change Risk Perception, Worry, and Concern. In book: Oxford Research Encyclopedia of Climate Science, Oxford University Press, editor M. Nisbett

[ix] https://www.bis.org/review/r151009a.pdf

[x] http://psiexp.ss.uci.edu/research/teaching/Tversky_Kahneman_1974.pdf

[xi] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1583509

[xii] https://www.economicsnetwork.ac.uk/sites/default/files/Ashley/6%20References%20for%20KBC.pdf

[xiii] Schneider, F. W., Gruman, J. A., & Coutts, L. M. (2005). Applied social psychology: Understanding and addressing social and practical problems. Thousand Oaks, Calif: SAGE Publications.

[xiv] https://www.globalpolicyjournal.com/blog/06/07/2018/market-valuing-climate-risk-all-wrong

[xv] Source: http://www.apa.org/science/about/publications/climate-change.aspx

[xvi] Foucault, M (1982) The Subject and Power, Critical Inquiry, Vol.8, No.4, pp. 777-795, http://www.jstor.org/stable/1343197

[xvii] Cronbach, L.J., and Meehl, P.E. (1955). Construct validity in psychological tests, Psychological Bulletin 52: 281-302; Brymer, A. and Cramer, D. (2005). Quantitative Data Analysis with SPSS 12 and 13: A Guide for Social Scientists. Routledge: London.

[xviii] https://www.cesarsway.com/cesar-millan/cesars-blog/power-of-the-pack