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Master thesis

Sustainable Business and Innovation

Organizational legitimacy as an incentive for companies to set ***science-based targets*** and shape a more attractive investor profile

An investor's perspective

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Abstract

Nature loss is an unprecedented global challenge, and pressure continues to increase. Public target setting instruments have emerged to facilitate the transformations necessary to restore our nature. Scholars have widely investigated these global goals and targets and consequently rejected the conviction that relying on these state-based goals and boundaries is effective to reverse nature loss. Science-based targets are a novel private governance instrument in the field of global target setting. Science-based targets, which can be set in support of the Science Based Targets initiative and soon also Science Based Targets Network, are new and unique for several attributes such as its monitoring and validation process, for being 'science-based', and because they have not been established through intergovernmental processes. Companies can use this instrument as a response to the increasing societal pressure to take responsibility for their environmental impact. This study aims to provide visibility on the overall effectivity of and driving forces behind science-based targets by linking it to two performance variables of companies: organizational legitimacy, and investor's willingness to invest. This study provides a theoretical contribution by setting first steps in the empirical assessment of the overall effectivity of science-based targets, and by placing science-based targets in a broader frame of global target setting. It also advances the existing literature on organizational legitimacy by using a qualitative research design, in which interviews were conducted among institutional investors. This study finds support for a relationship between companies that set science-based targets, organizational legitimacy, and investor's willingness to invest, in which transparency, risk mitigation, and data-driven accountability play a significant role. Science-based targets appear to have higher relevancy for environmentally sensitive companies. Furthermore, science-based targets may be enforced by public governance instruments. At last, this study opens the debate on the democratic legitimacy of the decision-making bodies behind science-based targets. These insights shed light in the incentives for companies to set science-based targets, which is directly linked to the participation rate in the Science Based Targets initiative and the Science Based Targets Network. The number of companies aligning with these initiatives is linked to the facilitating role of science-based targets to achieve full recovery of nature.

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A. Introduction

Climate change is an unprecedented global challenge, with increasing impacts and consequences on the Earth system, including Earth's biodiversity, freshwater, ocean, land, and climate (Biermann, 2014; Science Based Targets Network, 2020). In 2019, global greenhouse gas emissions continued to increase, "*reaching a record high of 52.4 $GtCO_2e$ (range: ±5.2) without land-use change (LUC) emissions and 59.1 $GtCO_2e$ (range: ±5.9) when including LUC"* (UNEP, 2020: IV). This is coupled with the state of nature, which has proved to be in serious decline in *"the extent and integrity of ecosystems, distinctness of local ecological communities, abundance and number of wild species, and the number of local domesticated varieties"* (Díaz et al., 2019: 1). Nature loss threatens economic activities, as nature is currently providing more materials and services than ever before (Díaz et al., 2019). Contrastingly, the business community significantly contributes to nature loss (Michaelowa and Michaelowa, 2017; Hoffman, 2016). **To safeguard their own business operations and reverse nature loss, the business community must take collective action to transform actions, technologies, and developments, to realize rapid and deep carbonization, negative carbon emissions, and enhance biosphere resilience (Folke et al., 2016; Rockström et al., 2016)**. One way to do so is by setting goal and targeting instruments, such as the Sustainable Development Goals, the Paris Agreement, and the Science Based Targets initiative.

Global goals and targets have emerged as important governance instruments, in which 2015 symbolizes a milestone year. The United Nations developed the 17 Sustainable Development Goals (SDGs) accompanied with 169 targets, scholars published the revisited planetary boundaries framework (Steffen et al., 2015), and 196 nations agreed on signing the Paris agreement with the common goal to limit global warming below 2, preferably to 1.5 degrees Celsius, compared to preindustrial levels (UNFCCC, 2020). Although these initiatives are promising, scholars have widely investigated these global goals and consequently rejected the conviction that relying on these state-based goals and boundaries is effective to reverse nature loss. The Paris Agreement has been circumscribed as *"a disembedded object*" because of abstract implementation methods and a lack of collective global actions (Morseletto et al., 2017: 665), it suffers from large-scale free-riding and does not cover comprehensive accountability mechanisms (Rockström et al., 2016). The planetary boundaries framework has shown its limitations in terms of political impact and faces its own boundaries (Biermann and Kim, 2020). The SDGs have been scrutinized for greenwashing because of selective reporting (Lashitew, 2021). These public initiatives have been established through intergovernmental processes and have been mostly targeted at state actors, which are factors that may contribute to the causes of these criticisms. **This leaves space for private governance instruments to make an appearance, which have been established through non-governmental processes, and become a significant actor in facilitating social and economic transitions needed to reverse nature loss.**

The Science Based Targets initiative is a private governance instrument, which also emerged in 2015. It is their objective to *"[m]obilize the private sector to set emissions reduction targets in line with climate science and play their part in accelerating the era-defining global effort to achieve a climate-safe future."* The Science Based Targets initiative (SBTi) distinguishes from other global goals and targets in three ways: (1) they are 'science-based', (2) they are specifically targeted at private actors, and (3) they have not emerged through

intergovernmental processes but through a partnership between the Carbon Disclosure Project (CDP), the United Nations Global Compact (UNGC), World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). (Science Based Targets, 2021A). A partnership of four non-governmental organizations (NGOs) as the decision-making body may avoid structural obstacles public institutions face (Gilligan and Vandenbergh, 2020). NGOs have increasingly gained power and exploited influence, yet they also increasingly received criticism for the past couple of decades. NGOs have been scrutinized for its lack of *"transparency, democracy, and accountability, thus lacking in legitimacy"* (Lehr-Lehnardt, 2005: 1). **If members from four NGOs comprise the decision-making body of the SBTi, they may be democratically problematic because they devaluate citizen participation** (Pickering et al., 2020).

As explained by Moldan et al. (2012), targets do not necessarily reflect the environmental performance required for achieving sustainability. Targets may be based on ideal states, expert opinions, environmental and public health standards, scientific literature, or political compromises (Moldan et al., 2012). The science-based targets are, as implied by the name *'science-based'*. As Pickering et al. (2020) proposes that science-based targets are targets for actors that are aligned with scientific evidence and may involve negotiations based on responsibility and feasibility. **Because scientific evidence on environmental matters plays a significant role in science-based targets, they distinguish from other private voluntary carbon reduction initiatives (Walenta, 2020).** Compared to other private target setting instruments, does it matter if a company target is explicitly based on science?

For companies to set science-based targets is a *voluntary* commitment, which requires that companies should receive beneficial outcomes because otherwise there is no incentive for them to implement such targets. Such beneficial outcomes can relate to a wide array of organizational characteristics, including risk management, reputation, efficiency, legitimacy, and shareholder value (Filatotchev and Nakajima, 2014; Hoffman, 2016; Martín-de Castro, 2020). This study investigates the impact of setting science-based targets on the organizational legitimacy of companies since this characteristic has proved to be a vital factor for companies to be considered legitimate. Previous research shows that legitimacy is linked to various other organizational beneficial outcomes. Legitimacy has proved to play a major role for firm survival (Suchman, 1995; Zimmerman and Zeitz, 2002), reputation (Thomas, 2007), it is linked to better access to resources and organizational results (Díez-Martín et al., 2013), investor appeal (Pollock and Rindova, 2003; Martín-de Castro, 2020), financial performance (Certo and Hodge, 2007; Ntim & Soobaroyen, 2013), and unsystematic variation in stock prices (Bansal and Clelland, 2004). If legitimacy is related to these beneficial outcomes, companies are likely to perform activities that maintain and enhance their legitimacy. **If setting science-based targets prove to be an instrument to enhance legitimacy, it is likely this will increase the motivation for companies to set science-based targets and subsequently participation rate will increase. Higher participation rate means more companies taking action to achieve full recovery of nature.**

Increased participation in the SBTi will strengthen its facilitating role in the transformation to combat climate change, which can be linked to a higher collective environmental impact. If few beneficial outcomes are observed, it is not likely that companies will adopt science-based targets, and an appropriate course of action should be considered to adjust these targets to increase positive impact for companies. This matter is particularly relevant since the Science Based Targets Network has been established to develop "science-based targets *for nature*",

which are expected to be published in 2022. The science-based targets for nature build off the Science Based Targets initiative, yet they are more comprehensive by taking not only into account the climate, but all Earth's system factors (biodiversity, climate, freshwater, land, and ocean), and target not only the private sector, but also cities and financial institutions. Science-based targets for nature support companies to move toward a "nature-positive" world, in other words, *"no net loss of nature from 2020, a net-positive state of nature by 2030, and full recovery of nature by 2050"*. (Science Based Targets Network, 2020: 7-8).

To estimate whether science-based targets may be an instrument to enhance organizational legitimacy, it is crucial to establish the actors that evaluate the legitimacy, which can be consumers, employees, the citizens, and investors, amongst others (Lamberti and Lettieri, 2011). **This study investigates organizational legitimacy from an investor's perspective** because organizational legitimacy has shown to be an intangible source of an investor to evaluate a company (Certo and Hodge, 2007). Legitimacy may thus influence the investor's willingness to invest, which is one of an investor's investment decisions (Triki, 2019). If investors are more willing to invest in a company that has set science-based targets, this could incentivize companies to set science-based targets. Furthermore, it is investigated that environmental performance and disclosures, CSR practices, and ESG performance of companies influence investor perceptions (for references consult Konar and Cohen, 2001; Iatridis, 2013; Ntim and Soobaroyen, 2013; Kang et al., 2016; Tarmuji et al., 2016). Furthermore, previous research proved that organizational legitimacy can partially have a mediating effect between CSR practices and financial performance (Ntim and Soobaroyen, 2013). Andersen et al. (2020: 3) suggest that investors will *"likely increasingly draw from specific science-based targets to inform their allocation of funds"*. This suggests that, from an investor's perspective, science-based targets are potentially linked to the investor's willingness to invest in a company that has set science-based targets, in which organizational legitimacy may partially have a mediating effect. Science-based targets increasingly receive attention in both research and practice, and therefore this research investigates two potential beneficial outcomes of companies that set science-based targets. Based on the preceding arguments, the following research question is formulated:

What are the effects on the organizational legitimacy of companies when they set science-based targets, and to what extent are these science-based targets linked to the investor's willingness to invest?

To shed light in this field of research, a qualitative research design is used in which the Science Based Targets initiative acts as an empirical testing ground. This study heeds to the call of Suddaby et al. (2017), Alexiou and Wiggins (2019) and Jahn et al. (2020) to research organizational legitimacy from an investor's perspective**. This study aims to provide a theoretical contribution in the field of global environmental goal and target setting by providing visibility on the overall effectivity of and driving forces behind science-based targets. It sheds light in the role science-based targets might play as an instrument to facilitate transformations needed to reverse nature loss.** This research is significant to practice as it provides insights for companies to consider their engagement in science-based targets, and it provides insights to the Science Based Targets Network to improve.

This thesis is structured as follows: first the theoretical framework is presented including corresponding hypotheses. Next, the qualitative research design is explained, followed by the results. Section E covers the

discussion, and section F comprises the conclusion. At last, the references can be found in section G, and the interview guide in the appendix, which is section H.

B. Theoretical framework

In the theoretical framework, the concepts of, and relationships between science-based targets, legitimacy, and investor's willingness to invest are explained with corresponding hypotheses.

Science-based targets

The concept of science-based targets increasingly receives attention (Andersen et al., 2020; Walenta, 2020). Science-based targets are a private climate action instrument that has been delineated as *"a critical object of inquiry, because they offer private sector actors a different path in setting carbon reduction goals"* (Walenta, 2020: 4). Companies can set science-based targets through the Science Based Targets initiative, which is registered on the UNEP Climate initiatives platform[1]. The Science Based Targets initiative emerged from a partnership between the Carbon Disclosure Project (CDP), the United Nations Global Compact (UNGC), World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). Its parent initiative is the Global Commons Alliance (GCA), and the SBTi is one of the We Mean Business Coalition commitments (Climate Initiatives Platform, 2021). The Global Commons Alliance (GCA) consists of four non-governmental organizations: Science Based Targets Network, Earth Commission, Earth HQ, and System Change Lab. (Science Based Targets Network, 2020). The Science Based Targets initiative is registered on NAZCA, the Non-state Actor Zone for Climate Action[2], and on LPAA, the Lima-Paris Action Agenda, both established by the UNSG and the UNFCCC secretariat at COP20 in Lima in 2014 (Abbott, 2018).

The Science Based Targets initiative is a private environmental governance instrument. **Compared to public environmental governance, private environmental governance may achieve emissions reductions more rapidly because they avoid structural obstacles faced in public governance (Gilligan and Vandenbergh, 2020).** Many studies have investigated performance variables of private environmental governance, such as Cashore (2002) and Bernstein and Cashore (2007) on the legitimacy of Non-State Market-Driven governance systems, Bäckstrand (2006) on the legitimacy, accountability, and effectiveness of multi-stakeholder partnerships, and Falkner (2017) on the legitimacy of private regimes such as ISO standards. Science-based targets are a type of private environmental governance target setting. Morseletto et al. (2017) highlight this is a field that should receive scholarly attention because it differs from other carbon reduction initiatives. Targets frame policy responses in particular ways and consequently may draw away attention from certain aspects of the problem (Morseletto et al., 2017). Targets may be based on ideal states, expert opinions, environmental and public health standards, scientific literature, or political compromises (Moldan et al., 2012). Hereby, science-based targets differ from traditional carbon reduction initiatives because the latter has been based primarily on *"which carbon reduction initiatives were in the planning pipeline"* (Walenta, 2020: 4). Science-based targets, as the term implies, have been based primarily on the latest available scientific evidence on environmental matters. Further clarification on the '*scientificness'* of these targets is provided by Rockström et al. (2021: 3), who define and quantify target ranges

[1] https://climateinitiativesplatform.org/index.php/Science_Based_Targets_initiative
[2] https://climateaction.unfccc.int/

for a "safe and just corridor", by distinguishing between *"scientific Earth system targets, which are targets at the global or near-global scale that are generated primarily by scientific inquiry but may be informed by societal judgments about risks (Pickering & Persson, 2020), and* ***science-based targets, which are targets for actors that are aligned with scientific evidence but which may involve negotiations based on responsibility and feasibility (Andersen et al., 2020)".***

If scientific evidence and negotiations on responsibility and feasibility are fundamental features of science-based targets, the relevance of the actors responsible for these expert judgments comes to the foreground. The SBTi consists of an Executive Board, a Steering Committee, the Project Core Team, and the Technical Advisory Group (TAG). Although the TAG consists of *"a group of volunteer advisors from business, academia, government, non-profit and multilateral organizations"*, the other three 'layers of governance' comprise staff of the partner organizations. (Science Based Targets, 2021B). Thereby, **the SBTi may lack in democratic legitimacy because this decision-making body devaluates citizen participation** (Fischer, 2017; Pickering et al., 2020). However, scientific knowledge about the state of ecosystems is crucial for making informed judgment on environmental matters. It could be that, as has been highlighted by Beisheim and Dingwerth (2008) there may exist a trade-off between democratic procedures and effectiveness. For the SBTi, there may exist a trade-off between democratic procedures and expert judgments. This study focuses on the legitimacy of companies that participate in the Science Based Targets initiative. It is assumed that, if companies participate in the initiative, they deem the SBTi a useful instrument to take responsibility for their impact on climate change, because it is unlikely companies will voluntarily associate themselves with illegitimate initiatives.

Companies have engaged in environmental target setting because of increased general attention on climate change and the corresponding societal pressures on the private sector to take climate action. Companies from all sectors face the risk of losing legitimacy if they do not comply with the expectations from the social system. Because public governance has faced structural obstacles in environmental problem-solving, private environmental governance has burst into the discourse and enjoyed an unprecedented amount of influence because they may achieve emissions reductions more rapidly (Gilligan and Vandenbergh, 2020). For companies to participate in a voluntary carbon reduction initiative, they must receive some sort of benefit, otherwise there is no incentive for a company to participate. There exist several reasons to engage in voluntary greenhouse gas reduction initiatives, such as enhanced corporate's reputation, reduced financial risk, regulatory compliance, and enhanced shareholder's valuation (Filatotchev and Nakajima, 2014; Hoffman, 2016; Martín-de Castro, 2020). The United Nations Global Compact identified several incentives for companies to engage in science-based targets, as highlighted in the following quote: ***"Science-based targets makes business sense, clear goals can future proof growth, save money, provide resilience against regulation, boost investor confidence, and spur innovation and competitiveness, while also demonstration concrete sustainability commitments to increasingly conscious consumers"*** (United Nations Global compact, 2021). However, this is not empirically researched.

Organizational legitimacy

Legitimacy in the global governance architecture knows many dimensions, distinctions, and methodologies, and has been delineated as a phenomenon that "resides in the eye of the beholder" (Ashforth and Gibbs, 1990: 177). Building on Scharpf (1999), Bernstein (2004: 157) states that *"[i]n terms of global governance, different audiences of state, civil society or marketplace actors may share different criteria or weightings of 'input' (procedural), 'output' (performance, efficiency), or more traditional notions of 'substantive' (values of justice and fairness) legitimacy"*. From a sociological perspective, legitimacy can be defined as "*a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values beliefs and definitions"* (Suchman, 1995: 574). Suchman (1995) identifies three dimensions of legitimacy, being cognitive, moral, and pragmatic legitimacy. Pragmatic legitimacy is a judgment that investors receive value from the organization. Moral legitimacy is a normative evaluation of the organization's activities relative to external norms, to estimate whether an organization's actions are considered "right". Cognitive legitimacy is a passive evaluation that an organization is simultaneously comprehensively and necessary. (Suchman, 1995). These dimensions may differ along temporal scales, in which cognitive legitimacy is most long-lasting, and pragmatic legitimacy is rather short time. Bäckstrand (2006) elaborates on the input and output legitimacy of Scharpf (1999) and highlights that high output legitimacy can, on some accounts, compensate for low input legitimacy, wherein 'input' refers to transparency and democratic procedures, and 'output' refers to effective collective problem-solving. There is a large constellation of research that investigates legitimacy of private environmental governance initiatives, including Cashore (2002), who investigated the cognitive, pragmatic, and moral legitimacy of non-state market-driven governance systems, Dingwerth (2005) who investigated democratic legitimacy of public-private rule making, Schaller (2007), who investigated the democratic legitimacy of multi-stakeholder initiatives, and Di Gregorio et al. (2020) who investigated the democratic legitimacy of transnational climate change initiatives.

This research focuses on the legitimacy of *companies*, which refers to legitimacy in an organizational context, in which companies wish to achieve *"congruence between the social values associated with or implied by their activities and the norms of acceptable behavior in the larger social system*" (Dowling and Pfeffer, 1975; 126). Practices to achieve this congruence include corporate social responsibility (CSR) strategies, which have proven to tools to enhance legitimacy in various sectors such as the oil and fashion sector (De Roeck and Delobbe, 2012; Du and Vieira, 2012; Fatma et al., 2019; Miotto and Youn, 2020). Burlea and Popa (2013) refer to voluntary social and environmental disclosures as instruments to enhance organizational legitimacy, and Schaltegger and Hörisch (2017) demonstrate that voluntary climate action of large international firms is mainly legitimacy-seeking. **This implies science-based target may also be an instrument for companies to enhance organizational legitimacy.**

Walenta (2020) demonstrates that science-based targets have received various criticisms for having too complicated methodologies, for being distracting from the global climate stabilization goal, and for being useful to only a limited number of companies. It is therefore important to gather empirical data on the effectivity of science-based targets as a climate governing instrument. Investigating the potential change in organizational legitimacy if a company sets science-based targets provides insight in the (beneficial) outcomes for companies if

they set science-based targets. **More evidence-based data on beneficial outcomes will likely increase participation in science-based targets and thereby increase its importance in facilitating the social and economic transitions needed for climate change (Fazey et al., 2018).**

It is important to consider that legitimacy is subject to interpretation of the individual (such as employees, consumers, and investors) evaluating the legitimacy. Filatotchev and Nakajima (2014) point out that future research should empirically assess the investor's perception of CSR strategies on the companies' valuation because although CSR activities may benefit employees, customers, and society at large, they reduce the present value of cash flow generated by the company. Several studies have suggested investigating organizational legitimacy from an investor's perspective (Suddaby et al., 2017; Alexiou and Wiggins, 2019; Jahn et al., 2020). More specifically, long-term institutional investors are assumed suitable sources for evaluating legitimacy derived from science-based targets, since they typically have a long investment horizon (Cox et al., 2004), and science-based target setting is expected to be rewarding in the long-term. The relationship between science-based targets and organizational legitimacy from an investor's perspective is hypothesized as follows:

H1: Companies that set science-based targets are associated with enhanced organizational legitimacy from the perspective of institutional investors.

Investor's willingness to invest

Investors are influential actors in the transition toward a 'safe and just operating space' because they have a large financial capital and can urge companies to transform and disclose their sustainability strategies. Previous research has linked environmental performance, environmental disclosures, CSR practices, and ESG performance to investor perceptions. Anton et al. (2002) show pressure from investors motivates companies to adopt an Environmental Management System (EMS). Investors can serve as an environmental governance instrument because a firm's asset value reduces as a result of poor environmental performance (Konar and Cohen, 2001). Iatridis (2013) shows that high quality environmental disclosure of companies is value relevant and improves investor perceptions. Correspondingly, Rivière-Giordano et al (2018) showed that environmental disclosure has a positive impact on investment recommendations. Kang et al. (2016) demonstrates that companies engaging in CSR are likely to benefit financially from their CSR investments. Tarmuji et al. (2016: 72) show that companies that disclose ESG practices in universal media were reported as "*having reputation gains, thereby increasing investor confidence*". However, **previous research has not linked private environmental target setting by companies to investor's decisions.**

One of the investor's decisions consists of their willingness to invest (Triki, 2019). Ming et al. (2015: 177) defined willingness to invest as *'a person's decision on investment that is influenced by various emotional and predictable cognitive biases that swerve them from behaving rationally'*. 'Willingness to invest' can also be defined as an `if-then' decision rule (Lindström, 1998). This rule is applied by Cheng et al. (2015: 3): *"[investors] are more willing to invest in the company if ESG indicators have higher strategic relevance".* In this study, investors are more willing to invest in a company *if* science-based targets have been set. **Investors will "*likely increasingly draw from science-based targets to inform their allocation of funds*" (Andersen et al., 2020: 3).** If this is indeed the case, companies

can shape a more attractive investor profile by setting science-based targets. This could incentivize companies to participate in science-based targets and thereby increase the overall participation rate.

There may also exist a relationship between organizational legitimacy and investor's willingness to invest. Several studies have linked organizational legitimacy to investor's valuations. Organizational legitimacy has shown to be an intangible source of an investor to evaluate a company (Certo and Hodge, 2007). It is proved that legitimacy is linked to an investor's appeal (Pollock and Rindova, 2003). In circumstances of unsystematic variation in stock prices, investors appear to prefer companies with higher levels of legitimacy (Bansal and Clelland, 2004). CSR practices can improve financial performance by gaining legitimacy (Ntim & Soobaroyen, 2013). Increasing legitimacy by incorporating goal-based institutions is increasingly important for shareholders (Martín-de Castro, 2020). If setting science-based targets are linked to enhanced organizational legitimacy, investor's willingness to invest could be redefined as: **investors are more willing to invest *if* science-based targets are linked to enhanced organizational legitimacy.** One of the outcomes of organizational legitimacy could be that investors have a willingness to invest in their company and thereby generate a more attractive company profile.

Accordingly, higher willingness to invest may be an outcome of setting science-based targets. Additionally, enhanced organizational legitimacy, derived from setting science-based targets, may also result in higher willingness to invest. This results in the second hypothesis:

H2: Companies with enhanced organizational legitimacy – derived from the science-based targets – are associated with higher willingness to invest.

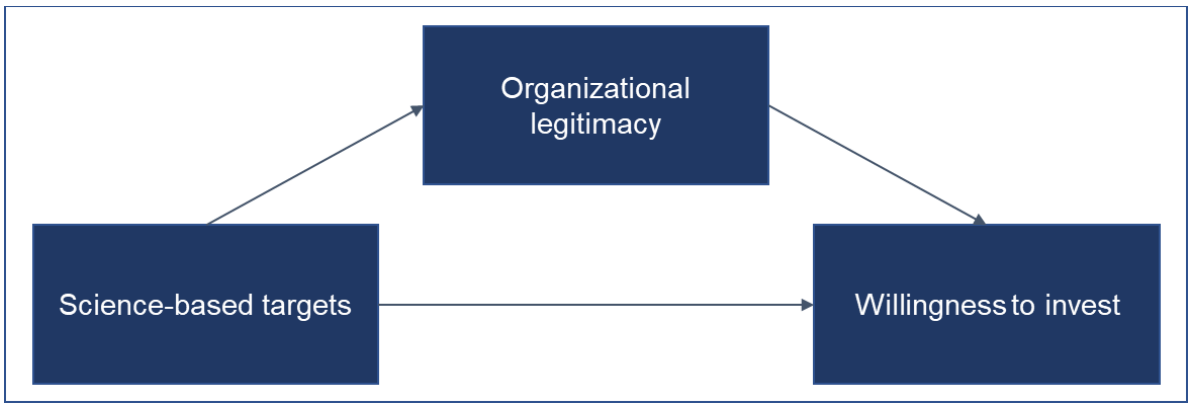


Figure 1: Conceptual model indicating a relationship between science-based target setting, organizational legitimacy, and investor's willingness to invest, in which legitimacy may partially have a mediating effect.

C. Methodology

To test the hypotheses, a qualitative research design is applied. **A comparative case study analysis is conducted, to identify the effects of setting science-based targets on the legitimacy of companies and how this is linked to the willingness to invest, from an investor's perspective.** Primary data was gathered by conducting interviews because it is believed they provide a 'deeper' understanding of social phenomena than would be obtained from quantitative methods (Gill et al., 2008). Interviews have the potential to gain detailed insight into the interviewees' point of view (Bryman, 2012), which is important because legitimacy has proved to be a difficult construct to measure (Díez-Martín et al., 2013; Schoon, 2020), and it is known to *"reside in the eye of the beholder"* (Ashforth and Gibbs, 1990: 177). The theoretical concepts discussed in the theoretical framework are operationalized, which consequently formed the basis of the interview guide.

Sample selection

The perspective of an institutional investor has been deemed an appropriate source to empirically investigate the legitimacy of companies that have set science-based targets and the related willingness to invest because they have large financial capital and a long investment horizon (Cox et al., 2004). There are several types of institutional investors, including banks, credit unions, pension funds, insurance companies, hedge funds, and venture capital funds (Corporate Finance Institute, 2021). For the selection of institutional investors, the geographical scope included institutional investors that are based in the Netherlands, because of geographical proximity from interviewer to interviewee. Pension funds, trust funds, insurance companies, and banks were approached within a timeframe of three weeks. In the Netherlands, pension funds represent the largest amount of invested assets in investment funds, representing over 70% in 2020 (De Nederlandsche Bank, 2021). Therefore, most investors in the initial sample selection were pension funds, and as a result, six pension funds and two banks comprised the final sample selection in this study. Employees of these institutional investors for participation in this study were found using theoretical sampling. Several criteria should be validated, being that they must have at least one year of experience in sustainable investing, and that they are familiar with science-based targets.

Potential participants were approached with a short informative message, primarily via LinkedIn, and via the researcher's network. When potential participants responded with interest, they received information about the research and specifics related to the interview via email. In total 50 potential participants were approached, of which 25 responded, of which 13 agreed to be interviewed. To ensure data saturation, the sample size should include at least 12 participants (Guest et al., 2006). In this study, 12 interviews were held with 13 participants. One interview was held with two participants, which was initiated by one of the participants. The interviewees occupied several functions, including 'board member pension fund', 'director sustainable investing research', 'sustainable strategist', 'portfolio manager', 'investment manager impact investing', and 'sustainability advisor', amongst others.

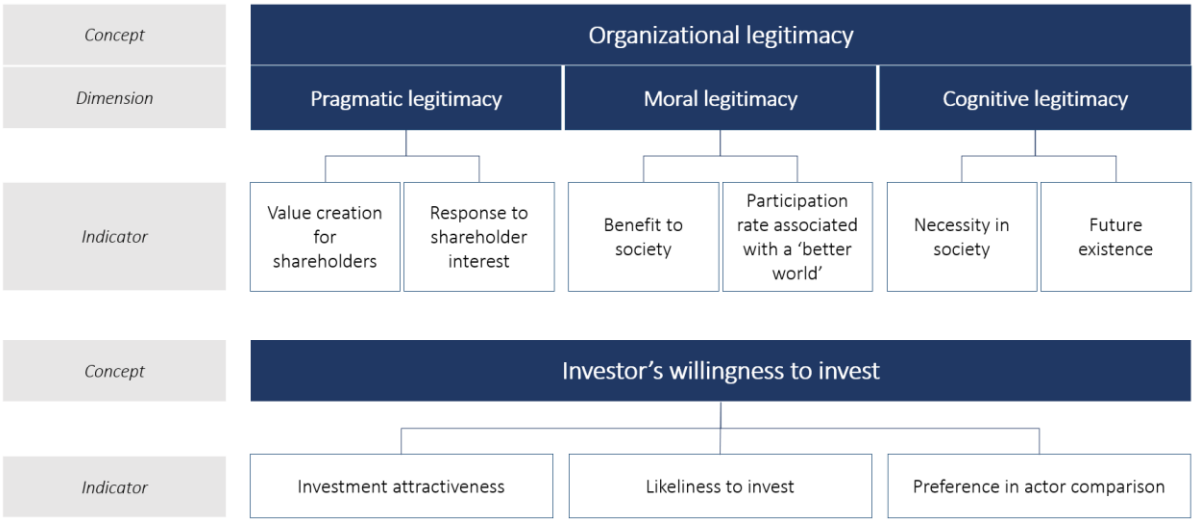
Operationalization

To empirically investigate the legitimacy of companies that have set science-based targets and the related willingness to invest, these concepts require operationalization. In this study, companies *set* science-based targets once they have received a "targets set" status from the Science Based Targets initiative. This can include a climate target for either a 1.5- or 2-degrees Celsius business ambition. **If a company has received a "targets set" status, this means that they have completed a five-step process which includes the following: commit to setting a science-based target; develop a science-based target in line with SBTi's criteria; submit science-based target for official validation by SBTi; communicate the science-based target to stakeholders, and; disclose emissions and track progress.** (Science Based Targets, 2021C).

To investigate the potential change in legitimacy of a company when they set science-based targets, **legitimacy is operationalized using a three-dimensional construct, including pragmatic, moral, and cognitive legitimacy**. Pragmatic legitimacy is a judgment that investors receive anything – directly or indirectly – of value from the organization. The organizations' behavior is evaluated based on how the investor is affected by its activities. Moral legitimacy is a normative evaluation of the organization's activities relative to external norms. What matters is if the organization increases social welfare and whether an organization does what is considered 'right'. Cognitive legitimacy is a passive evaluation that an organization is simultaneously comprehensively and necessary. The company should make sure that the actions they perform are understandable, in other words, that their actions should fit in the social system while at the same time, they should make sense in the daily lives of investors. This is a powerful source of legitimacy, since investors could not support a company's actions on an individual level, but still consider their products and services as necessary. (Suchman, 1995; Alexiou and Wiggins, 2019). Investor's willingness to invest is operationalized using by asking the interviewee about his/her attractiveness of an investment in the company, and how likely they are to invest in the company (Elliot et al., 2015). The interviewees were also asked to which company they were more inclined to invest in a scenario where two companies are completely equilibrated, except one company has set a science-based target in alignment with SBTi and the other has not, referred to as 'preference in actor comparison'.

For enabling the identification of changes in these dimensions of legitimacy, and willingness to invest, respective indicators were derived primarily from Alexiou and Wiggins (2019) and Elliot et al. (2015) (see table 1). **Measurement of the data was enabled by coding the participants' response to the indicator-related questions.** If participants confirmed presence of these indicators, this confirmed a shift in their perceived legitimacy and willingness to invest.

Table 1: Indicator framework for the operationalization of the three-dimensional construct of organizational legitimacy, and investor's willingness to invest.



Data collection

Semi-structured interviews were conducted among institutional investors. A set of fixed questions guaranteed that the concepts of legitimacy and willingness to invest were fully covered during the interviews. Meanwhile, the interviewee could answer the questions in a flexible manner.

The interviewees did not receive pre-reading information about the topics to be discussed during the interview, to prevent that the interviewee's perception might be affected beforehand. Although it is confirmed upfront the participants have knowledge on science-based targets, this was verified by asking questions such as *"How would you define science-based targets?"*, and *"Are you familiar with the Science Based Targets initiative?"*. **The interview guide included four sections: target setting relevance in investing, legitimacy, willingness to invest, and concluding questions (see Appendix 1)**. Before the interview commenced, practicalities including recording, anonymity, and time span were deliberated. Section II included questions related to the interviewee's current practices, target relevance in investing, the concept of science-based targets, SBTi and SBTN. For the interview to be valuable, it was important to get a clear point of view on the perception of the interviewee on the concept of science-based targets, as this concept is relatively new. Target relevance in investing is important because if there are no adequate monitoring and tracking mechanisms in place for the targets, the participation rate is not likely to become high. Section III included all organizational legitimacy related questions, and section IV included the questions related to the investor's willingness to invest, both based on the indicator framework (table 1).

To increase accuracy, a pilot interview was conducted to assess the understandability of the questions, to assess the usefulness of answers received, and to assess the time span of the interview. All participants were informed about the context of this study through email, and permission was asked to record. All participants remain anonymous, to increase honesty and credibility of the answers. This was deemed to be helpful, because various

participants verified before a question was answered whether they would remain anonymous. All interviews were conducted online through Microsoft Teams, except one interview, which was conducted online via Webex.

Data analysis

The interviews were recorded and transcribed manually using https://otranscribe.com/, promptly after the interview by one researcher. The transcriptions were transcribed manually because it would enhance the researcher's understanding of the participants' perceptions. Prior to actual data analysis, all transcriptions were sent to the participants for approval. Of all participants, one participant sent a revised transcription with minor adjustments. After approval, the process of data analysis in NVivo started. **NVivo is a qualitative data analysis computer software to organize, analyze and find insights in qualitative data like interviews (McNiff, 2016). The following approach (see figure 2) – designed by NVivo – was used to analyze the data**:

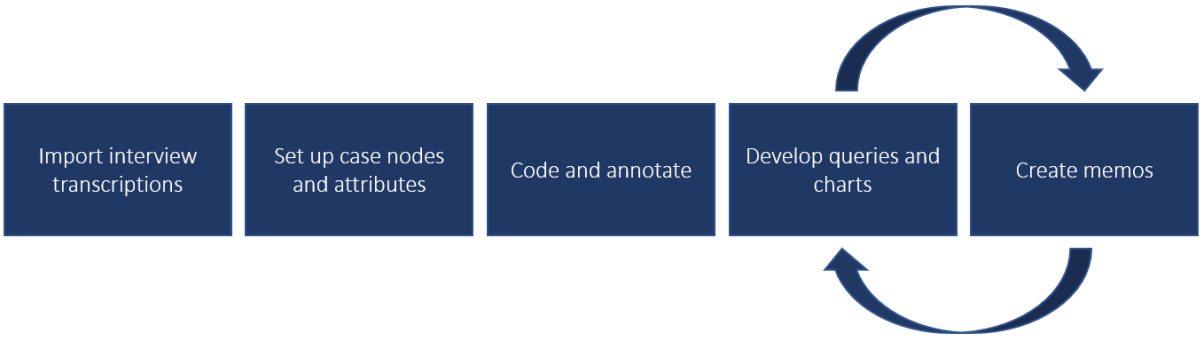


Figure 2: Data analysis approach, adapted from NVivo Help (2021)

First, all transcriptions were uploaded to NVivo in the 'Data' section. All transcriptions were classified according to company type (pension fund or bank). Next, a three-step process of coding took place, being: open coding, axial coding, and selective coding (Saldaña, 2009). Open coding includes the identification of concepts that are proximate to the data. To increase external reliability, and to create a concise dataset, three theoretical concepts formed the basis of concepts (referred to as 'nodes' in NVivo), being: science-based targets, legitimacy, and willingness to invest. These concepts include various categories (sub-nodes). For example, the node '*legitimacy*' comprises of four sub-nodes, being: *legitimacy of a company – definition; moral legitimacy; pragmatic legitimacy,* and; *cognitive legitimacy*. The references that were added to the nodes comprised of direct responses to the questions asked, and indirect findings that were deemed useful by the researcher. For example, if an interviewee deviated from the questions and elaborated on an individual experience or opinion, they sometimes provided useful information for sub-nodes, and such insights were added as a reference to the corresponding node. One extra node was added during open coding, being: 'other findings', including *sector differences, political involvement*, and *trends in sustainable investing*. After the first process of open coding, all nodes and sub-nodes were assessed on usefulness to answer the research questions. Various references were realigned to other sub-nodes, and consequently few sub-nodes were deleted. **This resulted in four nodes: (1) science-based targets, (2) organizational legitimacy, (3) willingness to invest, and (4) other findings.**

After the process of open coding, axial coding was applied, which includes the process of creating categories from the concepts, identifying the categories' properties, and what relationships are present between the categories. Per indicator, all references were classified into 'no confirmation', and 'confirmation', which identified the presence of an indicator. For example, the indicator 'Future existence' of cognitive legitimacy was confirmed when a participant responded to the question *"Do you think in the future it is still possible to imagine a world where no companies would set science-based targets, or do you think it is evident that in let's say 5 years, companies must set targets?"* with *"I do think the trend is that […] yes I would lean to say that this will be the standard"*. To interpret the data and identify relationships, several memos and maps were composed, and search queries were performed. For example, one memo showed that regulation was a recurring topic, and subsequently a query was performed on 'regulation'[3] , and revealed that regulation was present in all case files, covering all nodes. For each concept, attributes were identified that give an indication of why the presence of an indicator was (not) confirmed. For example, sectoral differences appeared to be indicative for non-conformance of the investor's willingness to invest. Third, to identify the analytic core of the theory, selective coding was applied, in which the results from open and axial coding were reanalyzed and realigned in an iterative process to get a comprehensive understanding and interpretation of all data gathered and analyzed. **Ultimately, the confirmation percentage of indicator presence and corresponding insights, such as understanding of why an indicator was not confirmed, enabled the researcher to support or reject the hypotheses.**

During the process of data collection, content analysis was performed on new concepts introduced by the participants, such as the recently published EU Sustainability-related Financial Disclosures Regulation (SFDR), the Morgan Stanley Capital International (MSCI) ESG Rating index, and company data sent by the participants, to get a better understanding of what concepts they associate with science-based targets.

[3] 'regulation' included the following search words: "SFDR", "EU taxonomy", "regulation", "wetgeving", "wet", and "art."

D. Results

Hypothesis 1

The first hypothesis is as follows: *"Companies that set science-based targets are associated with enhanced organizational legitimacy from the perspective of institutional investors."*

Data analysis supports the relationship between companies that have set science-based targets and enhanced organizational legitimacy. **Investors mostly refer to the concept of organizational legitimacy in three different ways: (1) license-to-operate, (2) long-term consistency between vision, mission, and business activities, and (3) providing valuable products to clients while taking into account society.** Legitimacy is operationalized in a three-dimensional construct of moral, pragmatic, and cognitive legitimacy. For each dimension, the results are explained with corresponding quotes to provide a better understanding. The associated attributes of science-based targets in relation to organizational legitimacy are summarized in table 2 and are elaborated upon in the following three subsections. These attributes comprise multi-dimensional traits that investors associate with organizational legitimacy in relation to science-based targets.

Table 2: Overview of identified attributes with corresponding legitimacy dimensions, including the frequency these attributes were referred to by interviewees.

Organizational legitimacy		
Attributes	**Legitimacy dimension**	**Relative frequency mentioned**
Data-driven accountability	Cognitive/Pragmatic	●●●
Standard practice	Cognitive/Moral	●●●
Fiduciary duty	Pragmatic	●○○
Regulatory compliance	Cognitive/Moral/Pragmatic	●●●
Responsibility in society	Cognitive/Moral	●●●
Sectoral differences	Cognitive	●●○
Business control	Cognitive/Pragmatic	●○○
Transparency	Moral	●●●
Risk mitigation	Moral/Pragmatic	●●●
Pressure from society	Cognitive/Moral	●●○
Pressure from investors	Pragmatic	●●○
'Scientificness'	Moral	●○○

Moral legitimacy

Two indicators that determine the presence of moral legitimacy are (1) benefit to society, and (2) participation rate related to a 'better world'. Presence of these indicators were confirmed by 83% and 75%, respectively. Companies that have set science-based targets are associated with various attributes of moral legitimacy, being: standard practice, regulatory compliance, responsibility in society, transparency, risk mitigation, pressure from

society, and '*scientificness*'. When companies have set science-based targets, they are deemed to be a responsible business that contributes to society. The following quote gives a sense of the general perception of all participants:

> *"I think it is good that for the complex problems we have to face, the business society takes responsibility."*
>
> - Board member pension fund (company A)

However, investors do acknowledge that **outcomes of those targets** partially determine the actual benefit to society. This is illustrated by the following quote:

> *"I think it also depends on the outcome [of the targets]. Because we also see companies that set goals and are working with science-based targets. But when I look at the development and how it goes now, then it does not look very pretty at all, then they really have a lot to do in the upcoming years. So it is not always positive. There are multiple oil and gas companies, where, if you look at their pathway to Paris, you wonder if they are going to make it."*
>
> - Director Sustainable Investment (Company F)

Companies that set science-based targets are considered to respond to what environmental science requires necessary, which is considered beneficial to society. Hereby companies also respond to the increasing pressure from society to take responsibility for their contribution to climate change. **In essence, the more companies that set science-based targets to tackle climate change challenges, the better.** This is further explained by the following quote:

> *"I don't know for 100% what will happen, but I think science is very very clear that there is 95% bigger chance that we have massive problems if we don't do something. That by itself is already reason enough to do something. And science-based targets are a way to bring about this change."*
>
> - Director Sustainable Investing research (company B)

Because science-based targets can be verified and monitored by the Science Based Targets initiative, it is also considered **an instrument that may diminish greenwashing**. Companies provide transparency in a consistent way that is in congruence with all other companies that align with the Science Based Targets initiative. This is illustrated by the following quote:

> *"I think science-based targets benefit the society, because in my opinion this is the way to go to decrease greenwashing, to be more transparent about what you're actually doing and try to base it on scientific knowledge or a decent framework."*
>
> - Analyst Responsible Investments (company E)

This quote also demonstrates the importance of a common scientific basis to set targets. Since institutional investors are generally long-term investors, they are attracted to companies that endure relative low risk, because companies with lower risks tend to have higher returns over the long term and are associated with better quality of management. If companies set science-based targets, those companies become more aware of their own risks

and can adopt appropriate mitigation practices. Next to that, companies that set science-based targets are associated with better risk management. This is valuable for an investor, because they need to adhere to certain risk benchmarks on portfolio level. It is insightful for investors if companies report data on their environmental risk. This is illustrated by the following quote:

> *"In general, we adhere to an ESG risk score of a company. We have certain targets on portfolio level that push investors to decrease their average ESG risk score on portfolio level below a certain benchmark."*
>
> - Portfolio manager (company C)

Pragmatic legitimacy

Two indicators that determine the presence of pragmatic legitimacy are (1) value creation for stakeholders, and (2) response to stakeholder interest. Presence of these indicators is confirmed by 90% and 83%, respectively. Companies that have set science-based targets are associated with various attributes of pragmatic legitimacy, including data-driven accountability, fiduciary duty, regulatory compliance, risk mitigation, and pressure from investors. Data analysis showed a clear linkage between companies that have set science-based targets and data-driven accountability. A company that sets science-based targets provides investors with useful data regarding their environmental impact in alignment with the SBTi which allows for consistency in reported data among all companies that aligned with the SBTi. The higher the participation rate of companies that align with the SBTi (and in the future with SBTN), the higher the success of science-based targets. This could also be beneficial for environmental reporting. **Investors speculate that the success of science-based targets is dependent on the quality of its monitoring mechanisms.** Ideally, science-based targets will become obsolete because it has become part of general financial accounting. This is also described by the following quote:

> *"I hope that the SBTi will continue to grow enormously as they do now, but I also hope that they will actually perish from their own success. So that it becomes common good in a sector that certain targets must be achieved in those sectors. And if you do not comply with that, that it is a punishment of your business model."*
>
> - Sustainable strategist (company B)

Investors are concerned with *greening* their portfolios because of two primary reasons: (1) it is in their DNA to act sustainably, and (2) they receive societal pressure to take responsibility and act more sustainably. Investors consider it their fiduciary duty to include companies that are tackling climate issues in their investment portfolios, and thus, companies act in the interest of investors. This is illustrated in the following quote:

> *"In terms of fiduciary duty, I would totally say that companies respond to interests of investors when setting science-based targets, because we are long term investors. We do believe that climate change is a long-term problem that needs to be addressed, and there is no excuse not to do it, and it's totally in line with the fiduciary duty to do this, and the opposite of not doing it for short term profit would be irresponsible."*

- Director Sustainable Investing Research (company B)

Companies that set science-based targets are associated with risk mitigation. If a company has set science-based targets, it shows that they are to some extent in control, or at least aware, of their risks. **Risk management is linked to upcoming regulation. If companies are not ready to be compliant with novel regulatory requirements, this is considered a company risk, which results in a less attractive investor's profile.**

Pragmatic legitimacy is specifically related to how stake- and shareholders are affected by the company's activities, and whether a company responds to the stake- and shareholders' interest. For various investors, return is still the main priority when evaluating a company, and some consider science-based targets nothing more than a '*nice-to-have*'. Remarkably, those investors that consider science-based targets as a nice-to-have, are mostly investors that are relatively conservative in their sustainability efforts. For example, they do not have a clear vision and goal on sustainability, or they raise the concept of problem shifting, as shown in this quote:

> *"If I stop investing in this company, another investor that is not concerned with sustainability will."*

- Sustainability advisor (Company D)

Investors seem hesitant when it comes to linking environmental targets to return. For pension funds, it is essential to provide their customers with a solid pension, which necessitates the generation of long-term return from investment. As an investment manager, it is their job to make thoughtful investments to generate solid returns. Currently, return is merely linked to science-based targets based on the belief that in the long term, not acting upon sustainability, will increase risk and may have financial impact, rather than that acting upon sustainability consequences higher profitability.

Cognitive legitimacy

Two indicators that determine the presence of pragmatic legitimacy are (1) necessity to society, and (2) future existence. Presence of these indicators is confirmed by 90% and 83%, respectively. Companies that have set science-based targets are associated with various attributes of cognitive legitimacy, including data-driven accountability, standard practice, regulatory compliance, responsibility in society, sectoral differences, and pressure from society. If companies set science-based targets, they report data that is accountable, which provides transparency for the investor. In the field of corporate sustainability, regulation is becoming more apparent. Upcoming regulation includes a carbon tax, Sustainable Finance Disclosure Regulation (SFDR), the EU taxonomy and the recently changed U.S. environmental policy. If regulation requires companies to monitor environmental data, it is useful to set science-based targets before regulation goes into effect, because in this way companies get better visibility on the required regulatory data. An example is illustrated by the following quote:

> *"If a company implements science-based targets, the company is better prepared for example, for a carbon tax. If a carbon tax is coming up, the SBTi helps to generate carbon data from the company's*

business operations, which is then useful data to adhere to the carbon tax. The company has control over its operations."

- Portfolio manager (Company C)

In line with regulation, a strong government was repeatedly mentioned as important factor in relation to cognitive legitimacy. A strong government can pressure companies to accelerate the transformation needed to reverse nature loss. **Investors highlight that public governance instruments can enforce private governance instruments, and vice versa.** The necessity of a strong government is addressed in the following quote:

"People see the need in the long term that this is a problem, that climate change and the lack of biodiversity and that that may affect us, but in the short term nobody moves. So they have to set goals, you have to give people fewer options, I am in favor of having a strong government that sets rules on that."

- Board member pension fund (Company A)

Environmental reporting instruments exist in many ways and are not homogeneous. This quote also displays a shortcoming in environmental reporting. There are multiple forms in which companies can report quantitative environmental data. Companies are unbound when choosing the baseline and scope for their calculations. This is troublesome for investors when they want to valuate and compare a company with its industry peers. Science-based targets may have different levels of relevancy in different industries. Companies that already have a low environmental footprint, such as a renewable energy company, are less concerned with reducing their footprint. **Companies from environmentally sensitive industries, such as the oil & gas industry, may generate higher beneficial outcomes from setting science-based targets, because they are more concerned of their environmental footprint**. It is thus of importance that for each sector, valid standardized methods and reporting comes in place, as shown in the following quote:

"..that [science-based targets] become part of regular non-financial accounting, and not a separate SBTi. Then it becomes completely mainstream. Standards should arise in the market, in which you can simply judge a company on that, sector by sector, just as how currently the profitability of companies is also assessed sector by sector."

- Sustainable strategist (Company B)

This quote illustrates that science-based targets could be an instrument to be incorporated in non-financial accounting and thereby could become a standardized instrument. This increases the potential of science-based targets to have a prominent role in the future. This is also important because the investors highlight many initiatives are emerging, and it is difficult for the investor community 'to separate the wheat from the chaff'. This is clearly described by the following quote:

"You see a proliferation of ESG rating methodologies, everyone does something different. Science-based targets can help to standardize and uniform the way you interpret ESG ratings, so I can imagine that ESG ratings can also be used in the further development of a standard therein."

- Investment manager Impact investing (Company C)

Hypothesis 2

The second hypothesis "*Companies with greater organizational legitimacy – derived from the science-based targets - are associated with higher investor's willingness to invest*", is supported by the data analysis. **Three indicators confirm the relationship between science-based targets and investor's willingness to invest, including (1) investment attractiveness, (2) likeliness to invest, and (3) preference in actor comparison.** Presence of these indicators is confirmed by 77%, 83%, and 77%, respectively. Several attributes have been identified that result in higher willingness to invest, including sectoral differences, risk mitigation, and alignment with investor's goals, amongst others (see table 3).

Table 3: Overview of the identified attributes for investor's willingness to invest, including the frequency these attributes were referred to by interviewees.

Investor's willingness to invest	
Attributes	**Relative frequency mentioned**
Sectoral differences	●●●
Standardization	●●○
Science-based targets as a threshold	●●○
Business control	●●○
Risk mitigation	●●●
Transparency	●○○
Validation	●○○
Company's commitment	●●○
Alignment with investor's goals	●●○

An investor builds its investment decision on many different determinants. Currently, all interviewed investors utilize ESG scores from external data providers that support the investor's assessment of a company profile. For some investors, science-based targets are included as a data point, either externally, incorporated in an ESG score, or internally, considered in the investor's qualitative assessment. **These investors postulate that in the future, if science-based targets become mainstream and standard practice, those could be used as a threshold to eliminate or exclude companies from their portfolio that have not set science-based targets.** These findings demonstrate that investors may be less likely to invest in a company that has not set science-based targets because it is a less attractive investment. This is also illustrated by the following two quotes:

> *"We now also look at forward-looking metrics, most likely we will include something like science-based targets. And then at one point, there will also be a threshold, that we would not accept an investment in such companies where we don't see this in place."*
>
> - Director Sustainable investing research (Company B)

> *"In 2030, I can imagine that, when a company has not set science-based targets, that multiple investors*

will eliminate such companies from their portfolio."

- Portfolio manager (Company G)

It should be taken into consideration that for environmentally insensitive companies, it is less relevant to set science-based targets, because they are using few natural resources and subsequently their business operations endure less environmental risk. On the other hand, environmentally sensitive companies are considered to have an added value when aligning with the SBTi. One example that recognizes science-based targets as a data point is Climate Action 100+, an investor-led initiative. Climate Action 100+ investors have committed to engage with the largest corporate greenhouse gas emitters to improve their climate performance and ensure transparent disclosure of emissions (Climate Action 100+, 2021). This is explained by the following quote:

"Within Climate Action 100+, we have a benchmark. [..] And that benchmark is an estimate of how well companies do when it comes to their transition. One of the data points in this is the targets that such a company sets, and if such a company has SBTi targets, then that is recognized in this benchmark."

- Sustainability strategist (Company B)

However, it should prevent companies from utilizing such an initiative to draw attention away from their unsustainable business operations. This is further illustrated by the following quote:

"Yes, I think that has added value for environmentally sensitive companies. But I do think that with such companies, just setting science-based targets, or joining such an initiative, that is just not enough. We often see Shell in the news that they work with renewable energy, but they also do such bad things, they deal with shale gas, arctic drilling, et cetera. Well, then you can have really nice science-based targets, but... "

- Director Sustainable investment (Company F)

Investors perceive companies that have set science-based targets as companies that take control of their business operations and thereby reduce risk. This is illustrated by the following quote:

"When a company sets science-based targets, on one side it can be seen as a positive impact, but on the other side it is also anticipating on potential environmental risks. So when a company sets such targets, it is also of importance for stake- and shareholders because in the future returns may decrease when they are not aligned."

- Portfolio manager (Company G)

Other investors have not included science-based targets as a data point because of various reasons. **Organizational structures and corporate policies may hinder the acceleration of corporate sustainability commitments and strategies.** For example, investors may update their corporate sustainability policy only every

four years, or because no clear corporate sustainability strategy and goal are in place. Such investors do recognize the potential of science-based targets and acknowledge that science-based targets may influence the qualitative assessment of the investor. This is illustrated by the following quote from a responsible investment analyst that works at an asset management company that has not included science-based targets as a data point:

> *"In the future, science-based targets may be integrated into our algorithms to value companies. Science-based targets could be a filter, that if companies do not have science-based targets, those companies are filtered out. It is very difficult to find good filters, to source the right data to integrate in such algorithms. But before science-based targets could be integrated as a filter, it has to become more mainstream."*
>
> - Responsible investment analyst (Company E)

As illustrated in the quote above, investors point out that science-based targets should be set by more companies in order to become a well-established instrument that could act as standard practice. Political involvement could potentially play an important role to make science-based targets more mainstream, because it could push companies to prepare for regulation by setting science-based targets. It may also push investors to 'green' their portfolios by engaging in more 'dark green' funds. SFDR developed article 9 'dark green' funds, which are *"funds that primarily have sustainable investing objectives"* (Sustainalytics, 2020). Investors recognize that if they are pressured to reduce emissions, it is more interesting for them to look at companies that have set science-based targets because they are already committed to reducing greenhouse gas emissions.

The majority of investors consider alignment with the SBTi as an added value and consider companies that have aligned with the SBTi to have a slight advantage over companies that have not aligned with the SBTi. It improves transparency and they provide credibility. One attractive attribute of SBTi is that it is expressed quantitatively, and investors generally prefer to analyze quantitative data, in combination with qualitative data to make sense of the quantitative statistics. However, investors point out that SBTi is only one of the many aspects taken into account when making an investment decision. This is displayed by the following quote:

> *"For us, it makes a difference if a company is aligned with SBTi, but it is definitely not the only thing we look at."*
>
> - Portfolio manager (Company C)

Furthermore, investors would not outsource their judgment to SBTi, meaning, that when a company aligns with SBTi, investors recognize this, but still conduct a company analysis by themselves and evaluate the environmental data including its calculations, scope, and baseline. This is partially because the SBTi also encounters challenges. The SBTi is active in a competitive field; there is a sprawl of initiatives while there is a need for standardization and uniformity, for one agreed-upon standard that is future-proof. This implies that SBTi first needs a higher participation rate to become standard practice in a fast-changing field. Till now, 1602 (11-07-2021) companies

have aligned with SBTi, of which 801 companies have in fact set science-based targets[4]. These companies are considered as the frontrunners. This is also illustrated in the following quote:

> *"Science-based targets are in principle suitable for the coalition of the willing. Till now, companies are not forced to set science-based targets. SBTi is an initiative for companies that want to be a frontrunner. Which appears to be true, because there are only 1000+ companies that have set science-based targets."*
>
> - Sustainability advisor (Company D)

Setting science-based targets is voluntary. There is no regulation in place that makes science-based targets an obligatory practice for companies. **Investors recognize this voluntary commitment, and for them, it would be worthwhile if setting science-based targets becomes part of accounting.** This is also considered as one of the end-goals of SBTi, which is illustrated by the following quote:

> *"I think and I hope that the SBTi continues to grow enormously as they do now, but I also hope that they actually perish from their own success. So that it becomes common good in a sector that certain targets need to be met in those sectors. And if you do not comply with that, then that is actually a punishment of your business model on its own. And that it actually just becomes part of ordinary financial accounting"*
>
> - Sustainable strategist (Company B)

Few investors question whether alignment with SBTi would result in a preference for the actor that aligned with the SBTi, compared to a hypothetical equilibrated industry peer that has not aligned with SBTi. Although alignment sounds promising, outcomes are considered much more valuable. This is illustrated by the following two quotes:

> *"If both companies have set science-based targets, and one company is aligned with SBTi, it is more of a quality mark, like the Beter Leven quality mark for meat, chicken, and eggs."*
>
> - Portfolio manager (Company C)

Additionally, it is expected that external data providers, such as Morgan Stanley Capital International (MSCI) and Trucost, will recognize or already recognize SBTi in their data. This is explained by the two following quotes:

> *"In practice, I don't think alignment with SBTi matters much to us, because if they publish that data in an annual report, it will be audited by an external third party anyway."*
>
> - Director Sustainable investment (Company F)

A trend that may accelerate the participation rate of companies in setting science-based targets, is that financial institutions have the possibility to align with the SBTi themselves, since the SBTi also developed a methodology to set science-based targets for financial institutions. **If institutional investors set science-based targets themselves, they are more likely to invest in companies that have also set science-based targets, because they are walking similar pathways.**

[4] The other companies are 'committed', which means they are still in the process of setting science-based targets.

Some institutional investors are not only acquainted with the SBTi, but recently got the Science Based Targets Network '*on the radar'* as well. These investors have a positive view on the potential success of the SBTN, as they recognize the need to assess and include other Earth system components besides climate change and other actors that should take action. SBTN not only builds of the momentum of the SBTi, they can improve their practices by learning from effective practices of SBTi, but also from received criticisms and shortcomings. For example, SBTN should prioritize transparency of their target setting methods, which appears to have ambiguity at the SBTi.

Science-based targets may be of higher influence on the investor's willingness to invest when a company in an environmentally sensitive industry engages in science-based target setting. Sectoral differences were widely addressed by investors. For companies in the environmentally sensitive and controversial industries such as the oil & gas and apparel industry, setting science-based targets is considered to be of higher importance because they are high emitters of greenhouse gases. Such companies are likely to have larger emission reductions, which implies they have the potential to make more impact compared to environmentally insensitive companies, such as, for example, a renewable energy company. These companies, that have high potential to realize high emission reductions, are more interesting for investors because the company's emission reductions are linked to the environmental performance of an investor's portfolio. **An environmentally sensitive company that sets science-based targets is thus projected to be more attractive for investors because the beneficial outcomes in terms of emission reduction are deemed to be higher than for environmentally insensitive companies.**

The investor community believes political involvement, such as environmental regulation, for both investors and companies, will support the path of SBTi toward becoming a standard practice. This is also illustrated by the following quote:

> *"I think certain targets will be very good and valuable, but there has to be legislation attached to them because otherwise it can never be made clear that it would be realized."*
>
> - Investment manager Impact investing (Company C)

However, the investors also mention that political involvement may *water down* the science-based targets, stating that no political involvement in fact gives credibility to science-based targets. For example, one of the criticisms of the Sustainable Development goals is that some goals are not in congruence with each other. This is illustrated by the following quote:

> *"The SDGs has been decided by the UN, and because of that, I think, certain aspects of the SDGs are flawed. Because something things could not be agreed on, and compromises were made, and because basically the whole world sits together with different backgrounds. There are a lot of inconsistencies if you look at all the targets, some of the sub targets are not consistent if you look closely."*
>
> - Portfolio manager (Company G)

However, SDGs were also appraised for its common language:

> *"..and differentiate them from other initiatives, which is the case of SDGs, because SDGs are quite vague actually, it is just a framework. The biggest merit of the SDGs is that they created some kind of common language, a common language that has been used by different entities."*
>
> - Responsible investment analyst (Company E)

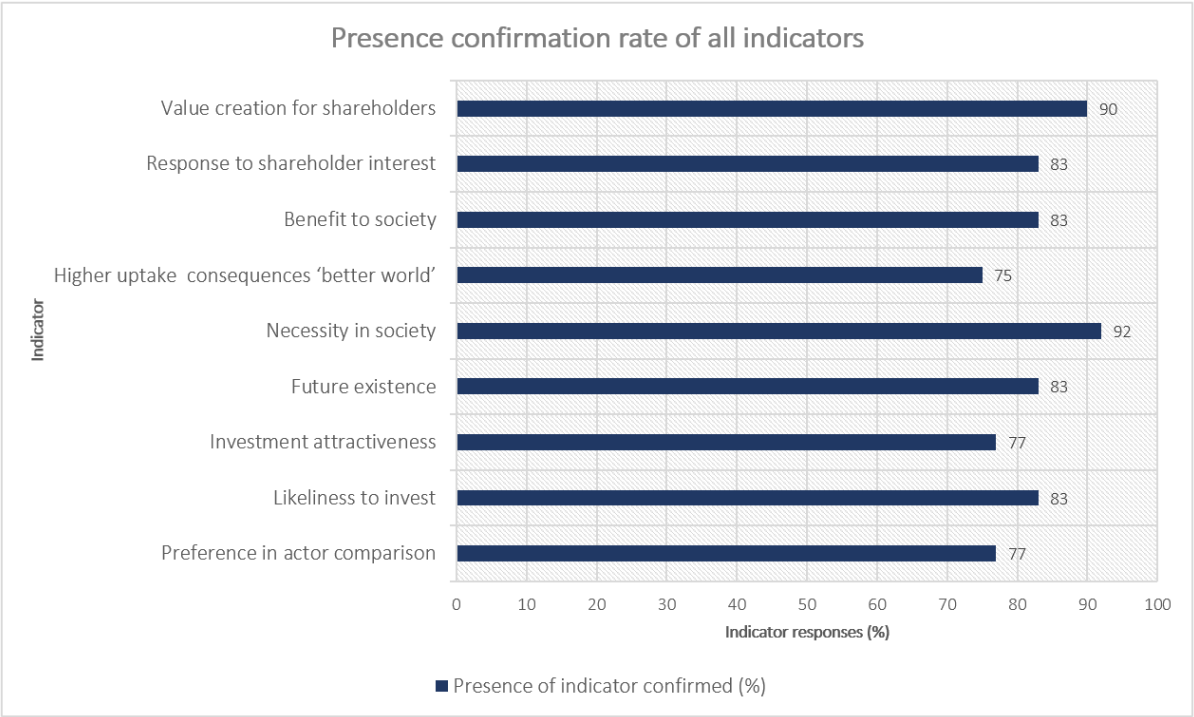
Next to political involvement, public opinion also starts to play a prominent role. From an internal perspective, young professionals may not want to work for companies that do not act upon their sustainability. From an external perspective, customers may be more concerned with building up sustainable pension.

A trend that slightly deviates from science-based targets but is likely to increase the investor's willingness to invest, is sustainability-linked bonds (SLBs). These bonds are linked to sustainability goals, and if these goals are not achieved by the company when the end duration of the bond is reached, they interest rate will increase for the respective bond. This means a company is punishing itself financially when it does not achieve its targets. This is the ultimate commitment for a company to make, from an investor's perspective.

Results in summary

Data analysis revealed that indicator presence for organizational legitimacy and willingness to invest comprised 84,3% and 77,7%, respectively (see table 4). Identified attributes that allowed interpretation of the data and understanding of the change in organizational legitimacy and willingness to invest are comprised in table 2 and 3. These tables confirm support for hypothesis 1 and 2, and thereby indicate that, from an institutional investor's perspective, setting science-based targets by companies is linked to enhanced organizational legitimacy, and enhanced investor's willingness to invest. **The primary attributes that explain these relationships are data-driven accountability, regulatory compliance, sectoral differences, transparency, responsibility, and risk mitigation.**

Table 4: Overview of presence confirmation rate for each indicator.



E. Discussion

The results support the relationships between science-based targets, organizational legitimacy, and investor's willingness to invest. In this section, the results are put in parallel to existing literature. All three concepts are discussed separately, including interlinkages. At last, significance to research and practice are elucidated.

Science-based targets

The results delineate a positive relationship between science-based targets, organizational legitimacy, and willingness to invest. This implies that institutional investors generally consider the Science Based Targets initiative as a legitimate private climate action instrument because otherwise their responses would not indicate a positive change in the performance variable of a company that has aligned with the Science Based Targets initiative. This supports the research of Lehr-Lehnardt (2005) who suggests that legitimacy of non-state actors is not necessarily based on democracy, but on the received trust in their quality and honesty of their work, and Beisheim and Dingwerth (2008), who indicate there may exist a trade-off between democratic procedures and effectiveness. **It may be that institutional investors consider scientific experts from non-governmental organizations to be suitable actors as the decision-making body since they are most knowledgeable in the scientific environmental sphere.** The SBTi could be criticized for devaluating citizen participation, which is a theoretical postulation for being democratically problematic (Pickering et al., 2020). However, other organizations have acknowledged SBTi publicly, for example on their websites or in articles, including the Dutch sustainable entrepreneurship platform Duurzaam Ondernemen and Boston Consulting Group (Duurzaam ondernemen, 2020; BCG, 2021). Above that, science-based targets themselves have recently been acknowledged by an influential leader, Joseph Biden, the president of the United States (Biden, 2021). It may be that external acknowledgment from well-known actors diminishes the concern of being democratically illegitimate. Further research is required to investigate the democratic legitimacy of the Science Based Targets initiative and the Science Based Targets Network.

A wide body of literature has investigated corporate (beneficial) outcomes of voluntary CSR initiatives, such as carbon reduction initiatives. Hoffman (2016) and corresponding references outlined various outcomes why it is interesting for companies to engage in voluntary CSR initiatives. Ntim and Soobaroyen (2013) showed that voluntary engagement in CSR can help companies to gain moral legitimacy. Schaltegger and Hörisch (2017) demonstrated that voluntary climate action of large international firms is mainly driven by '*legitimacy-seeking*'.

One important characteristic of science-based targets is that they are *voluntary*. Investors are supportive of voluntary engagement in CSR initiatives, including science-based targets. To illustrate, investors elucidated on the recent emergence of sustainability-linked bonds (SLBs), in which companies voluntary engage in a bond that includes higher interest costs if certain sustainability-linked targets are not met within the lifespan of their bond. It would be advantageous for the participation rate of the Science Based Targets initiative to position themselves as appropriate instrument to set sustainability-linked targets for SLBs. The results also indicate that investors call upon other companies to set science-based targets through the SBTi, because till now, investors find that relative few companies have set science-based targets. **If it becomes standard practice to set science-based targets in a sector, sector peers will be more concerned with setting science-based targets on a voluntary basis as well.**

Companies that set science-based targets are monitored by the SBTi on an annual basis, which requires companies to report on the data related to their science-based targets. This type of data-driven accountability partially avoids greenwashing. **In fact, findings of this study suggest that science-based targets from the SBTi are generally considered as a tool to *combat* greenwashing because of its accountability.** This disputes with Cormier and Magnan (2015), who argue that environmental disclosures may be subject to skepticism because of greenwashing and scandalous corporate behavior. Further research on types of environmental disclosures should clarify these challenging results.

Along with the SBTi, the number of emerging private environmental instruments is growing. **Investors consider uniformity as a crucial source for the success rate of the Science Based Targets initiative and the Science Based Targets Network**. It is therefore highly relevant for the SBTN to align with other nature-based initiatives such as the Task Force on Nature-related Financial Disclosures (TFND)[5] to realize uniformity.

Organizational legitimacy

By setting science-based targets, companies demonstrate that they take responsibility for environmental matters in their business activities. The use of this specific type of target setting is deemed beneficial for a company, since the results of this study show that setting science-based targets is associated with enhanced organizational legitimacy. **From an investor's perspective, science-based targets are deemed more legitimate than other environmental targets, because they are monitored and validated by the Science Based Targets initiative, and because they are based on scientific evidence of environmental matters.** Investors highlight that a clear and transparent methodology *per sector* and monitoring mechanism should be in place, otherwise data related to science-based targets is less likely to be taken into consideration. These results complement Cormier and Magnan (2015: 432), arguing that *"financial analysts seem to be able to decipher environmental information, discounting discourses that are inconsistent with a firm's environmental performance"*.

Previous research suggested that alignment with voluntary corporate social responsibility (CSR) and corporate environmental disclosure initiatives in various sectors could be considered as legitimizing tools (Handelman and Arnold, 1999; Palazzo and Scherer, 2006; Cho and Patten, 2007; De Roeck and Delobbe, 2012; Du and Vieira, 2012; Fatma et al., 2019; Miotto and Youn, 2020). This study expands this body of literature by including science-based target setting as a legitimizing tool for companies. Several attributes have been identified as a source for enhanced organizational legitimacy in terms of cognitive, pragmatic, and moral legitimacy, including data-driven accountability, regulatory compliance, transparency, risk mitigation, and responsibility in society. These results are in line with several identified benefits in previous research from Hoffman (2016). Hoffman (2016: 7-11) argued the following benefits from voluntary greenhouse gas reductions are most important: regulatory compliance, enhanced risk management, enhanced corporate reputation, increased operational efficiency, value in capital acquisition, and value in strategic direction and market growth.

[5] The "Task Force on Nature-related Financial Disclosure (TFND) was launched under the leadership of the Global Canopy, UNDP, UNEP and WWF, aiming to redirect financial flows towards nature-based solutions and nature-adding activities". (Canevari, 2020)

Regulatory compliance appeared to be an important attribute for companies that set science-based targets. **Institutional investors highlight the importance of a strong government and upcoming regulation to increase the participation rate in science-based targets.** Upcoming regulation could enforce the participation rate of science-based targets because setting science-based targets supports the readiness of companies to adhere to regulatory requirements. Clear reporting on environmental matters provides transparency of and demonstrates control over a company's business activities. Furthermore, it shows that companies are taking responsibility for their environmental impact and thereby respond to the societal pressure from various stakeholders to act upon environmental issues. This aligns with Delmas and Montes-Sancho (2010), who argue that it is difficult to induce improved environmental outcomes when firms participate in voluntary environmental agreements when no sanctioning mechanisms are in place. It also provides support for the paper of Gilligan and Vandenbergh (2020: 1) who argued that *"private governance on its own cannot provide an adequate response to climate change"*, yet public and private governance should be complementary. **If no clear monitoring and validation programs are in place, this may limit the legitimacy of the targets and consequently the organizational legitimacy of the companies that set science-based targets.**

Previous research has shown that controversial industries frequently find their organizational legitimacy being challenged (Palazzo and Scherer, 2006), and that, for oil companies, environmental disclosures may be seen as a pretense to continue with business as usual (Woolfson and Beck, 2005). However, **this study demonstrates that especially companies from environmentally sensitive industries can make a difference by setting science-based targets.** The rationale behind this is that science-based targets enhance data-driven accountability, which is linked to both organizational legitimacy and investor's willingness to invest. These findings provide additional support for various relating studies, including De Roeck and Delobbe (2012), who argue that a strong engagement in CSR initiatives in controversial industries can support organizational legitimacy, and Fatma et al. (2019: 11), who suggest that *"companies with a bad reputation for the environmental degradation can still reinforce its legitimacy in the stakeholder eyes through engaging in CSR initiatives that protect the natural environment".* Furthermore, Bansal and Clelland (2004) showed that investors are more likely to react to firms with low legitimacy, than those with high legitimacy, especially in the context of environmental performance. *"While investors may appreciate firms that are perceived to have good environmental legitimacy, they are more likely to act on information related to firms that have low environmental legitimacy"* (Bansal and Clelland, 2004: 101). These findings may provide companies in environmentally sensitive industries an additional incentive to set science-based targets.

Investor's willingness to invest

This data analysis supports the relationship between science-based targets and the investor's willingness to invest. Previous scientific research indicated a relationship between environmental performance, environmental disclosures, CSR practice and ESG performance, and investor perceptions (for references consult Konar and Cohen, 2001; Iatridis, 2013; Kang et al., 2016; Tarmuji et al., 2016). **This study advances the literature by including private target setting as an instrument to influence investor perceptions**. Cormier and Magnan (2015) show that environmental disclosure enhances the quality of analysts' information context. Lester et al. (2006) demonstrates that environmental uncertainty of a company influences investor valuations. This implies that if a company

provides more certainty through environmental disclosure, this may influence investor valuations. This study provides additional support for these findings, because it demonstrates that if a company sets science-based targets, and thus monitors and reports on their environmental impact, this results in a higher investor's willingness to invest.

As referred to in the section of organizational legitimacy, sectoral differences appear to influence the effectivity of science-based targets for companies in terms of organizational legitimacy and willingness to invest. Remarkably, science-based targets seem to have a greater effect on the performance variables of environmentally sensitive companies, because they can realize greater emission reductions. **This can be attractive for institutional investors, because in this way, they also realize greater emissions reductions in their portfolios, which is translated in their environmental performance indicators on portfolio level.**

Certo and Hodge (2004) show that organizational legitimacy has shown to be an intangible source of an investor to evaluate a company. Alexiou and Wiggins (2019) and references demonstrate that higher perceptions of organizational legitimacy are associated with a greater willingness to provide an organization with financial resources. **This study supports this finding by showing that enhanced organizational legitimacy, derived from science-based targets, is positively related to the investor's willingness to invest.** This shows that organizational legitimacy partially has a mediating effect between science-based targets and investor's willingness to invest.

This study confirms the insinuation of Andersen et al. (2020: 3), proposing that investors will *"likely increasingly draw from specific science-based targets to inform their allocation of funds".* Data analysis to support the second hypothesis confirms that science-based targets are included in some way already or may be included in the future in their ratings. A requisite for this is that the science-based targets become a standardized tool. **Standardization of science-based targets is of importance because it enables uniformity in the field of private environmental governance initiatives, it allows investors to compare company profiles within one sector, and because it creates transparency and intelligibility in the monitoring and validation of corporate environmental matters.**

While these results are beneficial for companies, it is also important that it becomes more apparent how science-based targets affect investor's performance variables, such as reputation and return. This study reveals that citizens are becoming increasingly aware of the sustainability practices of institutional investors. Consumers no longer approve pension funds that primarily invest in companies that generate highest return but may prefer investors that provide sustainable pension funds. From an internal perspective, young professionals may not want to work for institutional investors that do not act upon sustainability issues. **Evidence-based research could shed light on the beneficial outcomes for investors when they invest in companies that have set science-based targets.** This is especially relevant because in the near future it will be possible for financial institutions to set science-based targets as well, which allows investors to walk similar pathways as the companies they invest in.

Significance to research

This study illuminates on the recent emergence and growth of the concept of science-based targets. The results illustrate various beneficial outcomes for companies that arise when setting science-based targets. This research is therefore promising for the potential participation rate of companies in the Science Based Targets initiative and

the Science Based Targets Network. The results give an indication that science-based targets are **deemed valuable in facilitating the environmental transformations needed to restore and reverse nature loss.**

This research provides a theoretical contribution by illuminating on the effectivity of science-based targets and by synthesizing investor perceptions with private target setting instruments. Financial institutions are moving to the fore in environmental governance, which supports the justification for future research in synthesizing the investor world with private environmental governance, and specifically science-based targets. **If the business value of setting science-based targets becomes more stringent, this will be relevant for both the business community as well as the financial sector.**

On another note, this study opens the debate on the legitimacy of the Science Based Targets initiative. The decision-making body of the Science Based Targets initiative consists of partners of the four non-governmental organizations that have initiated the initiative. This study assumed that companies would not align with an initiative that they do not consider legitimate. **Although the decision-making body of the SBTi is not elected by the public and thus devaluates citizen participation, it appears that expertise is considered crucial for making informed judgments based on scientific evidence.** In this way, the SBTi may still be democratically legitimate and thereby shift away from the traditional form of democratic legitimacy that involves citizen participation. If it appears that these instruments lack in democratic legitimacy, it is not likely their will endure long-term success. Another point of discussion regarding the decision-making body of the SBTi is the balance in representation of the Global North and Global South. The Steering Committee of the Science Based Targets initiative consists of four partners with backgrounds in Sweden, France, the United States of America, and Mexico, which questions the representation of the Global South (Science Based Targets, 2021A). It would be interesting and – with the rise of science-based targets – highly relevant to investigate the democratic legitimacy of the Science Based Targets initiative and the Science Based Targets Network.

The approach from this study is relatively new as it examines the relationship between a type of private target setting and organizational legitimacy, from an investor's perspective. Hereby, this study responds to the call from Suddaby et al. (2017), Alexiou and Wiggins (2019), and Jahn et al. (2020) to examine organizational legitimacy from an investor's perspective. Furthermore, it confirms the insinuation of Andersen et al. (2020) that science-based targets are *on the radar* for investors since the results exemplify a link between science-based targets and the investor's willingness to invest. **Several investors consider it their *'fiduciary duty'* to take responsibility in environmental issues and to secure greater disclosure of climate risks and emission reduction strategies**. However, investor emphasize that, although targets are promising, outcomes are more important. If companies set science-based targets but do not get close to achieving their targets, this will be detrimental for companies. It should be noted that, among institutional investors, banks tend to be more conservative than asset managers. The distinction between institutional investors does not fall within the scope of this study, and therefore no clear statements regarding this subject are being made.

From a methodological perspective, this study contributes to the research on organizational legitimacy by using a qualitative research design with data collection from interviews, while most organizational legitimacy studies

have used other data collection methods such as survey questionnaires (Díez-Martín et al., 2013) or content analysis (Bansal and Clelland, 2004). Since legitimacy has proved to be a difficult construct to measure (Díez-Martín et al., 2013; Schoon, 2020), interviews are deemed a desired method for data collection as it can provide detailed insight into the interviewees' point of view (Bryman, 2012). This is confirmed by this research, as **it has shown that legitimacy is interpreted differently by investors.** Several investors defined organizational legitimacy as a 'license-to-operate', while others refer to it as 'long-term consistency between vision, mission, and business activities'.

The findings of this study must be interpreted with caution and several methodological limitations should be borne in mind. The data collection and analysis have been conducted by one researcher, which may cause interpretive bias of the data. Furthermore, the interviews were held with employees from pension funds and banks, which may affect the generalizability of the research findings to the institutional investor community. It may be that insurance companies or hedge funds have different perceptions, yet these are not included in this research because they have not responded to an interview request.

Significance to practice

Although the SBTi only covers greenhouse gas emissions, it has set a crucial basis for the concept of science-based targets, especially in the business community. In some cases, the SBTi is recognized as a data point in investor valuations, which is an acknowledgment of the SBTi in sustainable finance. However, the long-term success of SBTi is partially dependent on its lifetime. It is now in place for five years, in which approximately 1602 (on 01-07-2021) companies have aligned. SBTi acknowledges that it is important to approach the critical mass: *"SBTi companies now make up nearly 20% of total global market capitalization. Yet, there is room for growth. The SBTi still only covers a minority of private sector emissions and uptake is uneven. There is huge potential to scale up ambition and improve progress."* (Science Based Targets, 2021D: 7) SBTi also recognizes the need for transparency, and the need for a system-wide change. Although the potential is there, only time can tell whether science-based targets will indeed succeed and be effective as an instrument to restore and reverse nature loss. **Participation rate may increase if overall effectiveness of science-based targets becomes more stringent.** Future topics in this field of research could include performance variables such as business value, reputation, and stakeholder valuation. From an investor's perspective, especially more evidence-based data on business value would be meaningful.

This study demonstrates support from the institutional investor community to enforce private climate action instruments such as the Science Based Targets initiative with regulation and thereby confirms that public and private environmental governance are complementary. Public governance could be useful in various ways, for example, it could enable standardization by incorporating monitoring on environmental matters in mandatory annual non-financial reporting. Public governance may also support the target setting methodologies by endorsing database software development to track data related to the state of nature at a national or eco-region scale, for example by employing satellite intelligence. Additionally, public governance actors could enunciate public endorsement of science-based targets by recommending this instrument to companies to take responsibility for their environmental impact and build an appropriate corporate sustainability strategy.

This study advances the literature of private governance instruments by demonstrating the importance of uniformity among instruments. The current sprawl in carbon reduction initiatives is not effective for monitoring and validation. **Public and private actors should therefore create synergies and enable standardization among governance instruments.**

F. Conclusion

This study aimed to provide visibility on the overall effectivity of and driving forces behind science-based targets by identifying two beneficial outcomes for companies when they set science-based targets, being: organizational legitimacy, and investor's willingness to invest. This is coupled to the following research question: *"What are the effects on the organizational legitimacy of companies when they set science-based targets, and to what extent are these science-based targets linked to investor's willingness to invest?".* Previous research showed that CSR practices, environmental disclosures and sustainability strategies have affected organizational legitimacy and investor's decisions. This research hypothesized that companies setting science-based targets are linked to enhanced organizational legitimacy and higher investor's willingness to invest, from an investor's perspective. The qualitative results demonstrate that, if a company sets science-based targets, they may enhance organizational legitimacy because of six indicators, being: (1) value creation for shareholders, (2) response to shareholder interest, (3) benefit to society, (4) higher uptake consequences a 'better world', (5) necessity in society, and (6) future existence. Higher investor's willingness to invest was confirmed through the following indicators: (1) investment attractiveness, (2) likeliness to invest, and (3) preference in actor comparison.

The main findings of this research are as follows. Transparency and data-driven accountability appeared to be highly valued characteristics of science-based targets and are justifications why investors associate companies that have set science-based targets with enhanced organizational legitimacy (1). Companies that set science-based targets are associated with risk mitigation, and for investors, lower risks tend to be rewarding in the long term (2). Science-based targets appear to have higher relevancy for environmentally sensitive companies, because they are likely to realize higher environmental impact compared to environmentally insensitive companies. Higher environmental impact of companies is valuable for investors because it is coupled to the environmental performance of investor's portfolios (3). Science-based targets may be a tool to combat greenwashing, because of the SBTi annual validation program (4). Science-based targets can be complemented by regulation. Investors postulate that a combination of public and private governance instruments ensures the highest level of effectiveness to realize most environmental impact (5).

At last, this study opens the debate on the democratic legitimacy of the Science Based Targets initiative and the Science Based Targets Network. The driving forces behind science-based targets comprise scientific experts from global NGOs, with backgrounds primarily in the Global North. This decision-making body has not been elected by the public and has sidelined citizen participation. **The Science Based Targets initiative and the Science Based Targets Network may grow significantly in the upcoming years and thereby enjoy an unprecedented amount of influence.** The overall effectivity of and driving forces behind the science-based targets are thus highly relevant topics for future research.

This study advances existing literature by using interviews to assess organizational legitimacy, by using institutional investors as the sample for organizational legitimacy, and by providing visibility on the concept of science-based targets. This study is significant to practice as it provides incentives for companies to set science-based targets, because it used the Science Based Targets initiative as an empirical testing ground. Therefore, these findings are relevant for the Science Based Targets Network build upon and improve. Lastly, it provides evidence

for public and private actors to create synergies and enable standardization among governance instruments to take collective action. Concluding, this study reveals that companies that have set science-based targets are linked to enhanced organizational legitimacy and higher investor's willingness to invest. This provides insight in the overall effectivity of science-based targets, which is directly linked to the participation rate in science-based targets and consequently its potential to play a significant role in society to achieve full recovery of nature.

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H. Appendix

Interview guide

Introduction to the research

- Acquiantance and introduction to the research
- The interview will take approximately 40 to 50 minutes. This will include questions related to current sustainable investing practices, science-based targets, organizational legitimacy, willingness to invest and concluding questions. Please know that you may discontinue this interview without explanation at any time
- Please know that all data will be anonymized and, if desired, you can get a transcription and are allowed to alter the transcription, and if desired, all data can be destroyed after this research
- Please know that I will transcribe the research manually. You will receive the transcription by email to give consent.
- Do you give consent to record the interview?

Target setting in investing

1. Could you tell me what your main activities are at your company?
2. Are you familiar with the Science Based Targets initiative and/or the Science Based Targets Network? What do you know about it?
3. How would you define science-based targets in your own words?
4. What are your company's current determinants for sustainable development investments? (What framework/principles/policies are used?)
5. What type of target is a an 'ideal' determinant for an investment decision?
6. How does your company value the difference between companies that have set targets that are 'symbolic' (not achieved (yet), but committed) and 'substantive' (actual results, such as a clear reduction in CO2-e emissions)? Does it matter to you if a company has already reported substantive achievements regarding their targets?
7. In the case that you would use science-based targets as an investment decision, would you rather look at their commitments/forward looking metrics, or at what they have already achieved?
8. Till now, most companies have set climate targets. To what extent has your company focused on targets that are aligned with other components than our climate, such as biodiversity, species, and freshwater targets, and how important will this be in the future? (for example: "reduce to X by 2030 activities causing deforestation", and "reduce water use in high water impact parts of the value chain by x%")
9. How does this differ between sectors?

Legitimacy

10. Is a company that sets targets according to SBTi's methodology more convincing than without the SBTi?
11. In general, do you think a company creates value for its stakeholders when setting science-based targets? (pragmatic legitimacy)
12. By setting these targets, do you think the company responds to the stakeholder's interest? (pragmatic legitimacy)
13. Do you think that companies setting science-based targets is necessary in our society? (Or do you think other methodologies could be more effective to decarbonize and conserve nature?) (cognitive legitimacy)
14. In the near future, do you think it is difficult to imagine a world in which companies that have set science-based targets did not exist? (cognitive legitimacy)
15. In general, do you think such companies harm or benefit our society? In what ways? (moral legitimacy)

16. Do you think that, if more companies set science-based targets, the world would be a better place? (moral legitimacy)

Willingness to invest

17. How attractive do you consider an investment in companies that have set science-based targets?
18. On a scale from 1 (very unlikely) to 7 (very likely), how likely are you to invest in companies that have set such targets? Why?
19. In a scenario where all determinants to invest are equilibrated, would you be more inclined to invest in a company that has set specific science-based targets instead of a company that has not? If yes, why? What are the reasons that you would prefer an investment in such a company?

Concluding

20. To what extent do you have policies in place specifically targeted at SBTi/SBTN?
21. There are certain effects that are linked to SBTs such as reputation, risk management, quality of management. What do you think are the main effects of companies setting such science-based targets?
22. Do you have other remarks or suggestions that could be valuable for this study?
23. Do you know other potential participants for this study?

Thank you very much for your time and willingness to participate in this research. Do you have any final questions?