

Busch, Timo; Richert, Marcel; Johnson, Matthew; Lundie, Sven

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Climate inaction and managerial sensemaking: The case of renewable energy

Timo Busch¹  | Marcel Richert¹ | Matthew Johnson¹  | Sven Lundie^{1,2}

¹Faculty of Business, Economics & Social Sciences, University of Hamburg, Hamburg, Germany

²Sustainability Assessment Program (SAP), School of Civil and Environmental Engineering, UNSW Sydney, Australia

Correspondence

Matthew Johnson, Faculty of Business, Economics and Social Sciences, University of Hamburg, Rentzelstraße 7 Hamburg 20146, Germany.
Email: matthew.johnson@uni-hamburg.de

Abstract

While business responses to climate change have been well researched on the organizational and institutional levels, the corporate strategic behavior on the microlevel—that ranges from proactivity to climate inaction—remain under-researched. This article explores the individual determinants that affect the sensemaking phases, scanning, interpretation, and action, concerning the installation of on-site renewable energy technologies. We investigate the extent to which managerial sensemaking is affected by different perceptions, motives, and skills in relation to renewable energy. By doing so, we uncover the individual determinants that affect decisions to either accept or reject the installation of renewable energy technologies. We contribute to the literature on business responses to climate change by deriving several key individual determinants on the microlevel, including technological expertise, sustainability orientation, time perspective, and economic growth attitude, which affect managers' sensemaking. Thus, we offer a framework to illustrate how these individual characteristics can lead either to proactive business responses or conversely to climate inaction.

KEYWORDS

climate change, corporate sustainability, microlevel, paradox, renewable energy, sensemaking, trade-off

1 | INTRODUCTION

Despite major ecological disruptions emphasized in concepts such as the “Planetary Boundaries” (Rockström et al., 2009; Whiteman, Walker, & Perego, 2013), most companies have struggled to address grand environmental challenges effectively, such as climate change (Howard-Grenville, Buckle, Hoskins, & George, 2014; Levin, Cashore, Bernstein, & Auld, 2012; Slawinski, Pinkse, Busch, & Banerjee, 2017). One notable explanation for such inaction in corporate sustainability deals with trade-offs between economic, social, and environmental goals, where managers perceive them as organizational tensions under paradoxical frames, often yielding a prudent stance that leads to reactive or limited responses on sustainability issues (Hahn, Preuss,

Pinkse, & Figge, 2014; Kolk, 2012). For example, managers uncertain about issues concerning climate change in trade-off situations may choose not to act at all (Pinkse & Kolk, 2010).

At the same time, the literature has argued that managers may also respond to sustainability issues proactively (Aragon-Correa & Sharma, 2003; Jeswani, Wehrmeyer, & Mulugetta, 2008; Steger, 1993). Previous studies find that companies realize win-win situations for environmental sustainability, especially when managers realize under a business case frame the ability to make profits from environmentally friendly behavior (Hahn, Figge, Pinkse, & Preuss, 2010; Salzmann, Ionescu-somers, & Steger, 2005). In win-win situations, companies take a pragmatic stance to realize economic benefits to environmentally friendly actions (Bonacchi & Rinaldi, 2007). Although empirical evidence

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for win-win situations exists, many organizations continually fail to identify or exploit win-win opportunities (Lyneis & Sterman, 2016), which calls for further investigation into the cognition, values, and skills that these individual managers possess.

Existing studies on strategic business responses to climate change have been extensively researched; however, they provide little insight into individual determinants of climate action on the microlevel, as these studies focus mainly on organizational and institutional levels (Amran, Ooi, Wong, & Hashim, 2016; Jeswani et al., 2008; Kolk & Pinkse, 2005; Lee, 2012; Levy & Kolk, 2002; Stanny & Ely, 2008; Sullivan & Gouldson, 2016; Weinhofer & Hoffmann, 2010). By exploring the individual determinants of strategic responses to climate-friendly technologies on the microlevel, this article provides novel insights that can help to distinguish managers' inclinations either toward proactive or inactive responses regarding climate-friendly solutions. This article explores the sensemaking process on the individual level (Thomas, Clark, & Gioia, 1993), allowing us to identify determinants that affect managers' decision-making on one climate-friendly activity, namely the installation of on-site renewable technologies in German small and medium-sized enterprises (SMEs).

In this article, we pose the following research question: *how do individual determinants affect the managerial sensemaking process related to the installation of renewable energy technologies?* We explore multiple individual determinants in the three phases of the sensemaking process—scanning, interpretation, and action, which opens the black box of these phases. We investigate these sensemaking phases with owners/managers in multiple German SMEs during Germany's energy transition ("Energiewende"). We believe this is a unique research context to study managerial sensemaking on climate-friendly activities, as Germany's government provided financial support through a feed-in tariff to encourage firms to install on-site renewable energy technologies, such as wind and photovoltaic power systems (Schmid, Knopf, & Pechan, 2016).

By doing so, we contribute to the literature on business responses to climate change by providing novel insights on individual determinants on the microlevel (i.e., cognition, values, and skills), which can help explain subtle but important differences between proactivity and climate inaction. Currently, the topic of climate inaction has only been explored in one previous study (Slawinski et al., 2017). Thus, we provide novel insights related to climate inaction, including a theoretical framework and several propositions that elucidate how these individual determinants affect the sensemaking process, which can result in climate inaction.

2 | SENSEMAKING IN CORPORATE SUSTAINABILITY

Although we find a growing academic interest on business responses to climate change, previous research on the effect of individual determinants in order to explain the nature of corporate inaction are still rare. Previous research investigating business responses to climate change focuses on the organizational level (Lee, 2012; Levy & Kolk,

2002) or the institutional level (Jeswani et al., 2008). One recent study (Slawinski et al., 2017) proposes a multilevel framework that explains how short-term time perspectives and uncertainty avoidance at the individual, organizational, and institutional level reinforce each another to result in climate inaction. The authors define climate inaction "as the failure to reduce absolute GHG emissions due to a lack of effective measures" (Slawinski et al., 2017, p. 254).

One way of exploring individual determinants of strategic responses to corporate sustainability and related topics (e.g., climate change) on the microlevel is by means of managerial sensemaking (Angus-Leppan, Benn, & Young, 2010; Hahn et al., 2014). Managerial sensemaking represents "the primary state where meanings materialize that inform and constrain identity and action" (Helms-Mills, 2003, p. 35). Within companies, sensemaking is an ongoing process that helps to explain how individuals think and act when facing ambiguity as well as surprising or novel events (Weick, Sutcliffe, & Obstfeld, 2005; Maitlis & Christianson, 2014). Moreover, sensemaking involves not only cognitive realization, but also interpretation in conjunction with scanning as a prerequisite for action (Daft & Weick, 1984). Thus, three distinguishable phases—scanning, interpretation, and action—inform managers' sensemaking and decision-making (Thomas et al., 1993).

Hahn et al. (2014) propose how two opposing cognitive frames—a business case frame and a paradoxical mental frame—that can influence the sensemaking process. Both frames explain different managerial responses to general sustainability issues. Both frames result in different natures of scanning, interpretation, and managerial response, including pragmatic or prudent stances. Moreover, the effect of mental frames on the individuals' sensemaking process is expected to be moderated by their personal characteristics, including their identity or perceived roles within firms (Hahn et al., 2014).

Lyneis and Sterman (2016) illustrate how poor organizational performance can create a capability trap, which in turn results in a vicious cycle preventing investments and fostering organizational inaction in a corporate sustainability context. Another explanation for inaction is that it is a result of contrary institutional logics due to conflicting public perceptions (Hoffman, 2011). For example, contradictory logics can increase skepticism regarding the impacts of climate action and foster corporate inaction (Gao & Bansal, 2013).

Only recently, scholarly attention has recently increased on how individual managers deal with interrelated tensions between the three sustainability dimensions from an integrative or paradox approach (Daddi, Ceglia, Bianchi, & de Barcellos, 2019; Van der Byl & Slawinski, 2015). This discussion of sustainability trade-offs and paradoxes at the individual level of analysis has gained increasing momentum in the past few years, yielding new insights on how individual characteristics influence corporate behavior (Hahn et al., 2014; Kolk, 2012; van der Byl & Slawinski, 2015). Most of this research has been conceptual. However, recent studies link theoretical concepts to empirical observations of such tensions to the paradox approach, such as the observation of tensions for company's circular economy strategies (Daddi et al., 2019).



Exploring sensemaking process in the context of climate change constitutes a powerful concept for empirically exploring and understanding corporate behavior on the microlevel, especially for climate inaction. Following this idea, we utilize the sensemaking process by analyzing the phases of scanning, interpretation, and inaction. Based on this initial understanding, our qualitative research design seeks to elaborate on this theory using the analytic induction method. Specifically, we explore various determinates of individual managers, including cognition, motives, and skills, which influence these process, as illustrated in the specific context of Germany's energy transition. We briefly describe the phases of the sensemaking process and context of this research before moving on to the methodology.

2.1 | The sensemaking process

The sensemaking process consists of three distinguishable cognition-action phases, including environmental scanning, interpretation, and action (Thomas et al., 1993). In the first phase of the sensemaking process, scanning deals with the identification and collection of information as a precursor to interpretation and action. Scanning activities entails the acquisition of technological, economic, political, and competitive information. Frequently, scanning is portrayed as an outward-looking event, searching external sources for suitable information; however, in many cases firm-internal expertise can provide valuable information, for example, when implementing new processes and technologies (Caloghirou, Kastelli, & Tsakanikas, 2004).

In the second phase of the sensemaking process, interpretation involves deciphering obtained information in some structured way. This phase involves fitting the information into existing categorical frames and labels, making connection between prior experience and the newly acquired information (Thomas et al., 1993). In third phase, action depends greatly on managers' ability to implement decisions based on both scanning and interpretation phases. Furthermore, action can be attributed to the level of risk, novelty, and commitment that managers sense in pending projects (Hahn et al., 2014; Plambeck & Weber, 2010). A manager's perceived risk is considered as a key determinant in taking a specific response and affecting decision-making biases (Hahn et al., 2014; Thomas et al., 1993). Additionally, manager's affiliation to novelty and level of commitment often help to overcome barriers and invest in innovative (and perhaps immature) eco-friendly technologies (Hahn et al., 2014).

2.2 | Individual determinants

As sensemaking processes occur in and between human beings, they are influenced by unobservable cognitive aspects such as beliefs, role-perceptions, identities, or personal backgrounds (Starbuck & Milliken, 1988). This implies that the managers' personal characteristics influence how information is recognized, interpreted, and translated into dedicated company action (Griffith, 1999; Hockerts, 2015).

Since top managers are one key actor for engaging in corporate sustainability (Barter, 2016), the exploration of how personal characteristics influence the organizational sensemaking process is relevant to gain a better understanding of the individual perceptions and barriers toward more sustainable business practices (Onkila, 2016; Stuart, Schewe, & McDermott, 2012). When managers have the power to influence companies' engagement in corporate sustainability, they do so according to their personal values (Hemingway & MacLagan, 2004). The managers' individual sensemaking of sustainability issues will inevitably determine corporate environmental strategies and action (Hahn & Aragón-Correa, 2015; Sharma, 2000). Therefore, linking personal characteristics to sensemaking processes in the context of renewable energy can yield fruitful insights to explain the nature of decision-making practices surrounding the business case for sustainability (Banerjee, 2001).

2.3 | Context: Germany's energy transition

The sensemaking process is influenced by the context in which they occur (Thomas et al., 1993). In this article, the context is Germany's energy transition ("Energiewende"). The feed-in-tariff, a cornerstone of this energy transition, came into legal effect in 1990 as compensation for upfront investment and installation of renewable electricity generation, including wind, biogas, hydroelectric and photovoltaic systems (Schmid et al., 2016). This feed-in tariff is one of the major reasons why Germany's end-consumer electricity prices in 2017 were almost 50% higher than the European average, matching only Denmark at the top of the European list (BMW, 2018). The feed-in tariff equaled above €20 billion generated income, which roughly half of the entire amount (ca. €10 billion) is allotted to nonutility German companies, such as manufacturers and landowners (BDEW, 2018). Due to growing electricity costs, the two most common measures that companies take to mitigate the rising prices is increased energy efficiency and the installation of on-site renewable energy technologies, including wind and photovoltaic power systems.

Manufacturing companies can realize several benefits by investing in renewable power generation provided they have the adequate conditions and infrastructure (e.g., sun-drenched rooftops). First, companies' can decrease overall electricity costs when generating their own electricity. In 2017, the average German SME consumed 50 MWh electricity per year, and paid 21.7 cents/kWh (Bundesnetzagentur, 2018). If the SME were to invest into a small-scale photovoltaic power system, factoring initial investment cost to annuities, the resulting electricity generation cost would equate to 47% savings per year (Fraunhofer, 2018). Second, the fixed compensation provides an additional incentive by selling excess electricity to the energy market. In July 2014, companies received a fixed compensation of 12.9 cent/kWh for solar power paid for 20 years after the installation. This figure is the minimum guaranteed price to companies generating their own electricity by feeding excess power back into the grid. Third, the increased production and consumption of renewable energy leads to environmental performance improvements by

reducing carbon emissions. This improvement acts as a signal to investors and customers, leading to a better image and good stakeholder relations (Barnett, 2007; Freeman, 2010).

However, the fact remains that the majority of German companies still have not invested in on-site renewable energy production (Schmid et al., 2016). Previous research explains how firms respond to such incentives in light of climate change due to organizational or institutional factors (Hoffman, 2011; Kolk & Pinkse, 2005), we still do not know why individual managers would be hesitant to act. We focus individuals' sensemaking process and analyze the influence of managers' characteristics that determine climate inaction.

3 | METHODOLOGY

In this article, we followed the qualitative approach of analytic induction for several reasons. First, our initial goal was to create a robust framework pinpointing individual determinants (perceptions, motives, and skills) that affect the sensemaking phases for the installation of renewable energy technologies during the German Energiewende (context). In a similar way, Bansal and Roth (2000) used analytic induction to develop a theoretical model between motives and context for corporate ecological responsiveness. Second, we aimed to expand on existing theoretical developments, that is, sensemaking within paradox theory (Hahn et al., 2014), rather than create an entirely novel grounded theory. Additionally, this approach encouraged a recursive method between data collection and theoretical confirmation. Thus, analytic induction permitted the use of an inductive approach while building on existing theories, which was deemed more useful than grounded theory in our exploration (Manning, 1982).

We conducted interviews in order to gain close interaction with the research subjects (Eisenhardt, 1989) to generate new empirical findings (Flick, von Kardoff, & Steinke, 2004). Interviews were deemed useful to gather in-depth information on individual determinants influencing the sensemaking processes. In related sensemaking research, conducting interviews has proven to be an adequate research method (Maitlis, 2005; Rouleau & Balogun, 2011).

3.1 | Sampling

We applied a theoretical sampling approach for selecting cases, which is recommended according to analytic induction. Theoretical sampling was a critical step in the design and data collection phase, which increased the external validity and generalizability of our findings and leads to a higher quality of the derived theoretical propositions. We applied four criteria in the selection of our cases: First, the level of analysis in this article is the top manager, who is in charge of steering the company simultaneous to implementing sustainability practices. In most cases, the top manager is the chief executive officer and

company owner. Based on this level of analysis, the focus of our study is deliberately on SMEs with one manager in charge. This allowed us to explore the influence of individual-level determinants, including cognition, personal values, and skills, on the sensemaking processes of scanning, interpretation, and action.

Second, the sample contains multiple industries to ensure that the expanded theory is generalizable and reduces bias from industry-specific traits. This sampling strategy is justified because climate inaction can be observed across industries. Furthermore, we selected industries where electricity costs are expected to be salient. Managers need to notice an issue consciously in order for the issue to be available for sensemaking (Starbuck & Milliken, 1988).

Third, cases were required to have adequate facilities to install renewable energy technologies, that is, a suitable rooftop, to ensure that the selected companies can install these technologies on-site. Thus, we were able to presuppose that on-site renewable energy generation—in combination with high electricity prices, which in theory should have presented ample reasoning for a win-win opportunity for all sampled companies.

Lastly, we established a significant heterogeneity of decision-makers by looking for polar managerial types, who are likely to extend the theory (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). The polar types of this article are defined as managers that either installed on-site renewable energy generation or not, regardless of other contextual factors like industry or firm size. In other words, the group of managers that have installed on-site renewable energy generation are representatives of one polar type, while the other polar type has not installed or planned for renewable energy technologies despite a given business case, representing climate inaction. The sample is evenly distributed between both polar types. Analyzing polar types allowed us to iteratively compare and identify emerging patterns and new theoretical findings more easily, as similarities and differences of contrasting cases are illuminated (Eisenhardt & Graebner, 2007).

We scanned for potential interview candidates in Germany and followed a replication logic among both polar types. Replication of evidence is essential to generate a high external validity of our findings (Gibbert, Ruigrok, & Wicki, 2008). In the beginning, we developed a list of potential interview candidates by scanning publicly available firm lists, reports about on-site renewable energy generation and field trips in northern Germany. This sampling was conducted in advance to the interviews to ensure that the candidates fulfill the sampling criteria. Eligible companies were approached by telephone calls and received a short presentation that contained high-level interview information framed as investigation about energy prices. The total sample consists of 14 managers in SME. The largest SME had 70 employees and the smallest 7 employees. Half of the sample utilizes renewable energy technologies, and the other half does not. In order to maintain the interviewees' privacy, all SMEs have been anonymized and we refer to the cases as IV01 to IV14. Table 1 provides a descriptive overview of the interview profiles.

TABLE 1 Interview profiles

Interview	Sex	Age	Industry	Staff #	Sales per year (mil €)	Hiring of interviewee	Founding year	Solar energy	Wind energy	Geotherm. energy	Inaction
IV01	m	34	Restaurant	7	0.4	2006	1877	X	–	–	–
IV02	f	44	Automotive	40	2.2	1994	1978	–	–	–	X
IV03	m	67	Bakery goods	70	3.0	1981	1959	–	–	–	X
IV04	m	60	Printing services	6	0.8	1982	1982	X	X	X	–
IV05	m	49	Fish processing	32	6.0	1996	1996	X	X	X	–
IV06	f	49	Retail	17	2.5	2001	1977	X	–	–	–
IV07	m	58	Meat packaging	7	0.7	1986	1986	–	–	–	X
IV08	m	59	Meat packaging	45	3.5	1988	1988	–	–	–	X
IV09	m	51	Confectionery	18	n/a	1996	1952	X	X	–	–
IV10	f	48	Bakery goods	20	1.0	2008	1948	–	–	–	X
IV11	m	66	Food processing	50	12	1986	1986	–	–	–	X
IV12	m	58	Bakery goods	20	2.5	1986	1956	X	–	–	–
IV13	f	48	Retail	23	4.0	1994	1919	X	–	–	–
IV14	m	43	Food processing	7	0.5	2000	2000	–	–	–	X

Note: “n/a” denotes information was not accessible; “X” denotes applicable field; “–” denotes non-applicable field.

3.2 | Data collection

We collected data through semi-structured interviews face-to-face as the main source of information. Additional information was gathered through observations during multiple visits and meetings as well as through company documents and websites. For the interview, the questions were open-ended to ensure that the interview candidates could share their perceptions freely and to obtain the beliefs and opinions in the interviewees' own words (Kvale, 2008). Accordingly, we established a structure while leaving room for new aspects and topics brought up by the interviewees (Flick et al., 2004), as well as change the order of questions to take advantage of specific opportunities (Eisenhardt, 1989).

We established the interview guide after reviewing the sensemaking literature. Based on the literature review, potential explanations for climate inaction evolved. For example, managers could miss relevant information in the scanning phase. These potential explanations served as a starting point for the interviews and helped to design the interview guide (Eisenhardt, 1989). Such an approach is linked to a higher internal validity of findings (Gibbert et al., 2008). Three researchers conducted interviews at the companies' facilities, in which two of them attended all of the interviews to secure a high reliability of findings (Flick et al., 2004). The duration of the interviews varied between 45 and 83 min.

The interview guide covered two thematic areas. The first area was about the sensemaking process and the companies' scope of action. We asked for electricity price effects, potential mitigation options, and knowledge about renewable energies. Second, we focused on individual characteristics like background, beliefs, skills, and perceptions in a sustainability context. Central aspects, such as salient sustainability issues, were not defined by the research team but described by the interviewee. In order to ensure the consistency

of our research, all interviews were recorded on audio files, transcribed, and added to the internal database, increasing the reliability of this research (Yin, 2003).

Two researchers reviewed and discussed each interview to interpret and identify emerging theoretical findings (Yin, 2003). New insights were adopted into the interview guide following the first three interviews. The interview guide was not further developed after nine interviews because no new theoretical insights or phenomena were observed (Eisenhardt, 1989; Yin, 2003). Nevertheless, we conducted five additional interviews, covering both polar types, to confirm our first observations. The outcomes of these interviews were in line with the previous ones. As a result, they fostered our theoretical findings by providing greater empirical evidence.

3.3 | Data analysis

Data analysis started during the collection phase by using commentary memos including first impressions, pathways to follow, learnings, and descriptions of each case (Eisenhardt, 1989; Gersick, 1988). In this way, we were able to address emerging themes and probe them deeper in further interviews. We adopted a single case study approach, as it was deemed suitable to contribute substantially to theory building on the sensemaking processes (Eisenhardt & Graebner, 2007). Afterward, two researchers again analyzed the transcribed interviews in three phases: within-case analysis, cross-case analysis, and theory building (Miles & Huberman, 1994).

The first phase was a within-case analysis to establish a detailed understanding of every single case (Eisenhardt, 1989). Two researchers dived deep into the data and coded the material individually. Codes focused on sensemaking, manager characteristics, and

renewable energy topics. As analytic induction begins with a small number of cases of the phenomenon to be explained, we searched for similarities that could point to common factors (Manning, 1982). Both researchers independently examined the codes for similarities and differences to aggregate categories and identify relationships. We concentrated on the dominant patterns, meaning that both researchers identified these patterns. In cases where no common understanding was derived, a third researcher was consulted to develop a unified understanding (Eisenhardt, 1989).

In the second phase, we conducted a cross-case analysis (Gibbert et al., 2008). Both researchers independently analyzed the material again and focused on cross-case similarities and differences. We looked for replicating evidence to confirm and disconfirm emerging theoretical relationships (Eisenhardt, 1989). Replication allowed us to identify emerging categories and relationships by matching patterns within and between the cases. Similar to the first phase, we focused on dominant patterns identified by both researchers and findings proven by replicated evidence.

In the third phase, we aimed to build the theoretical framework. All researchers developed the relevant categories, subcategories, dimensions, and their operationalization. We used the empirical evidence to derive a categorical manifestation for every case. Based on this manifestation, we grouped the interviews that show highly homogeneous patterns.

4 | RESULTS: PHASES OF MANAGERIAL SENSEMAKING

Throughout the analysis, we sought to open up the black box of managerial sensemaking processes with additional categories and subcategories in the existing processes, scanning, interpretation, and inaction. Figure 1 reveals the subcategories that emerged in the literature review as well as from our inductive approach. In total, we were able to identify nine subcategories in the three processes as well as an additional category “trigger,” which serves a starting place for the sensemaking process. It is important to note that each subcategory was developed to distinguish differences in our polar types, that is, managers that either installed or did not install renewable energy technologies.

The following subsections will detail the individual categories and subcategories, making clear distinctions between our two polar types, which we label as proactive responses and inactive responses (see

Table 2). Managers that reflected proactive responses (IV01, IV04, IV05, IV06, IV09, IV12, and IV13) are those individuals, who have installed one or more renewable energy technologies at their facilities. Managers that revealed inactive responses (IV02, IV03, IV07, IV08, IV10, IV11, and IV14) are those individuals, who did not invest in on-site renewable energy technologies.

4.1 | Trigger and scanning

At the beginning of the sensemaking process, managers' were triggered by their primary motivation considering major investment decisions, in this case being the installation of renewable energy technologies. For managers following a proactive response, the sensemaking process was triggered by normative inspirations, where they perceive themselves as people of moral conviction. This conviction reflects their exhaustive and ethically oriented values toward sustainability. Moreover, they considered a long-term orientation of investments for sustainability-related projects, in which the payback period could extend well beyond 10 years. For example, one manager demonstrated this realization: “We had 17 branches in peak times... The energy balance was horrible... That is why we cut and dismissed, withdrew and condensed everything... And if it pays off in only ten years, it is okay. And if it will be twelve years, it's all the same to me.” (IV09).

On the contrary, the main motivation of managers with inactive responses is triggered by instrumental reasoning, which is rationalized by a strict cost–benefit assessment. As one manager explained, “The costs are the major driver regarding investment decisions” (IV07). These managers did not resemble their motivation according to a strong sustainability orientation, as they did not consider sustainability to be important for current or future investments unless there is a clear and immediate economic benefit. It appeared that managers with inactive responses had a more rigid concept of return on investments, and their ambition was framed in terms of economic gains.

Comparing the scanning phase between the two groups followed three subcategories—scope, sources, and approach—which is explained from each manager type below. Starting with proactive responses, managers possessed a distinct acuity and expertise on sustainability issues, which translated into a detailed and broad scope of scanning for information on sustainability issues. Their expertise served as a major source of information for sustainability-related practices and investments. Although these managers engaged in sustainability networks, they relied mostly on “in-house” expertise and

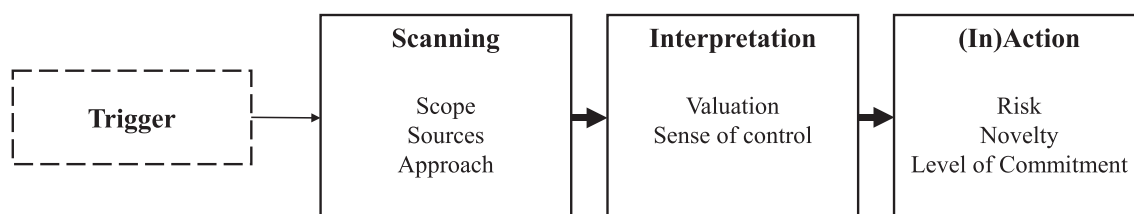


FIGURE 1 Managerial sensemaking in the context of renewable technologies

TABLE 2 Managerial sensemaking process: Categories and responses

Categories	Subcategories	Description	Proactive responses (i.e., managers accept the installation of renewable energy technologies)	Inactive responses (i.e., managers reject the installation of renewable energy technologies)
Trigger	–	The manager's primary motivation to install renewable energy technologies (e.g., vision, perception, etc.)	<i>Normative</i> , that is, managers sense a responsibility that goes beyond financial gain, and considers societal and environmental issues, like climate change	<i>Instrumental</i> , that is, managers perceive increased costs and potential savings through alternative energy sources
Scanning	Scope	The depth of scanning for information, either detailed or not, and the breadth of scanning as "focused search" or "general browsing" (Hahn et al., 2014, p. 469).	<i>Detailed scan</i> , that is, managers conduct a detailed, and purposeful search of more broad information on renewable energies	<i>Limited scan</i> , that is, managers carried out a limited, non-detailed search, which consisted of general information
	Sources	Managers build up internal expertise or rely on external sources like industry networks and energy consultants	<i>Internal expertise</i> , that is, managers rely on own expertise or trusted employee within the company	<i>External sources</i> , that is, managers sought out professional advice from external consultants
	Approach	Managers either "actively search the environment for an answer" or "accept whatever information the environment gives them" (Daft & Weick, 1984, p. 288)	<i>Active</i> , that is, managers scanned actively for an answer to particular their own questions and uncertainties of renewable energies	<i>Passive</i> , that is, managers accepted the information that was presented to them in a passive way
Interpretation	Renewable energy valuation	How managers interpret renewable energies, either as a positive benefit to the business or negative impact on the bottom line	<i>Positive</i> , that is, managers are convinced that their decisions in renewable energies was the right one	<i>Negative</i> , that is, managers are highly skeptical that renewable energies would bring benefits to any company, especially their own
	Sense of control	Manager's perception of "his or her ability to effect a change in a desired direction" (Greenberger & Strasser, 1986, p. 164)	<i>High sense of control</i> , that is, managers perceive the ability to manage and control renewable technologies from operational and financial perspectives	<i>Low sense of control</i> , that is, managers feel they "at the mercy of others" dealing with renewable technologies
(In)action	Risk	The willingness to take operational, financial, or legislative risks regarding sustainable practices	<i>Risk tolerant</i> , that is, managers are very willing to take financial risks at the sake of their climate reduction strategies	<i>Risk adverse</i> , that is, managers refrain from investments because it has not been adopted by many firms in the past
	Novelty	Novelty of sustainability-related practices in the form of modern technology	<i>Innovative</i> , that is, managers are very willing to try something new	<i>Conservative</i> , that is, managers wait until technology is mature, providing sufficient proof of success
	Level of commitment	Willingness to overcome barriers and invest an above average amount of time in corporate sustainability	<i>Highly committed</i> , that is, managers to pursue environmental goals	<i>Uncommitted</i> , that is, companies not interested in pursuing sustainability-related topics

provided inspirational examples for other companies, often arranging informational events and were open to on-site facility visits. In total, this reflected their active approach to scanning for information, as expressed by one manager: "I always searched and asked. And when you search and ask a lot, then you find people and information." (IV04).

Inactive responses revealed a different approach to scanning. These managers gathered sustainability-related information on an ad hoc basis, only triggered when an investment is regarded as financially attractive. They perceived the scanning of information related to

renewable energy technologies as time-intensive. Accordingly, they appreciated the assistance and insights coming from energy consultants. Compared to proactive responses, the information mostly stemmed from external sources, including these consultants, as well as newsletters and information gathered at trade shows. Local networks, such as trusted contacts at chambers of commerce, appeared to be value sources of information regarding renewable energy. Overall, managers with inactive responses approached scanning very passively, as they are barely engaged in additional scanning for sustainability-related information. As a result, the obtained

information regarding renewable technologies was quite limited and oftentimes outdated.

4.2 | Interpretation

The interpretation phase consists of two subcategories—valuation of renewable energy and sense of control. For managers with proactive responses, they expressed a positive mindset on the installation of renewable energy technologies. The evaluation of renewable energy technologies is influenced by their long-term investment orientation. As a result, sustainability practices do not have to pay off immediately or generate large profits. Managers with proactive responses accepted trade-offs between environmental and economic goals, often siding in favor of the environmental dimension. Their acute sense of control reflected a strong technological expertise on the subject, which includes a broad information base, which subsequently affected their perceived control over most sustainability issues. Indeed, they perceived their own technological competence as superior to others, including energy consultants.

Typically, managers with inactive responses interpreted renewable energy technologies as relatively undesirable, as these technologies are associated with high upfront investments, long amortization periods, and perceived hidden costs. In their opinion, on-site renewable energy installations represented neither attractive cost-savings nor profit-generating measures. This negative valuation is reinforced by a short-term investment orientation. Additionally, outdated information acted a main lever for the negative valuation of renewable energy technologies. As an example, one manager (IV10) considered the possibility of renewable energy in 2009. Considering that renewable energies have vastly improved and decreased in overall cost since then, this manager was convinced otherwise: "Five years ago, our landlord calculated the costs of [renewable energy] installation for this building. This was interesting to see; however, it would not have amortized in a life-time." (IV10). Furthermore, managers with inactive responses sensed little or no control over renewable energy technologies, highlighted by the communicated need to assign energy consultants or external advisors to issues dealing with energy savings and potential investments.

4.3 | (In)action

Managers with proactive responses acted in a pro-environmental fashion, who installed on-site renewable energy systems as an essential part of internally consistent environmental practices. These managers were willing to take operational and financial risks, even if this meant potential financial losses. While the installation of renewable technologies is perceived as novel and technologically sophisticated, proactive managers tend to be early adopters, as they appeared highly open to undertake new endeavors. They also represented a high level of commitment by overcoming barriers to match their sustainability vision. One case company was one of the first to invest in wind power in Germany in 1994, which had to fight against NGOs, political groups and grid operations to obtain the authorization to

build wind turbines on-site. This manager stated, "To obtain the authorization to build the wind mill was pretty difficult... but it is also pretty exciting to install such a thing. For me that was great, a dream came true." (IV04).

On the contrary, managers with inactive responses behaved in accordance with their limited scanning and negative interpretation of renewable energy installation. Beyond risk aversion, managers with inactive responses tend to implement technology only when it is fully developed and widely diffused as proof of its success in other companies. As one manager stated, "We were advised against it because the technology has not reached sufficient maturity yet" (IV07). Hence, they rejected the installation of renewable energy technologies for the time being. Nevertheless, we detected consistency between their cognition, motivation, and action toward sustainability-related matters. When they perceived a pay-off in the immediate short-term, they appeared more willing to take action. Previously implemented practices, such as the conversion of lighting to LED, carried a low financial risk, and they preferred mature versus early-stage technologies. For example, one manager explained: "The technology was not applied on a wide range before. That is why we refrained from such an investment" (IV08). Overall, inactive managers resembled a low level of commitment regarding sustainability practices, as they rarely engage in sustainable activities.

Exemplary quotes between both manager types highlighting the key differences can be found in Table 3. In summary, proactive responses includes those managers who have made novel changes and desired to inspire others along the way. They attempted to create a positive effect with regards to their environmental responsiveness. Several individual determinants appear to stand out between managerial types (proactive versus reactive), including initial motivation (normative versus instrumental), technological expertise on renewable energy technologies, expected time horizon for return on investments (long-term versus short-term orientation), and willingness to sacrifice economic gains for environmental pursuits. Managers with proactive responses hold strongly formed positive opinions toward renewable energy technologies despite economic setbacks, leading to a strong commitment to pursue environmental goals. On the contrary, managers with inactive responses revealed little to no commitment to environmental sustainability, restricting their investment behaviors to cost-benefit considerations. This leads us to consider how sensemaking can lead to favorable responses toward climate change, but changing the determinants of climate inaction.

5 | DISCUSSION: MICROLEVEL DETERMINANTS FOR CLIMATE INACTION

Expanding on the results in the previous section, we present a framework (Figure 2) containing the individual-level determinants in the three sensemaking phases, that is, scanning, interpretation, and action, which lead to proactive or inactive responses on the installation of renewable energy technologies. It visualizes the identified relationships between individual determinants and sensemaking phases. Based on these findings, we develop four propositions (P1-4) accordingly.

**TABLE 3** Exemplary quotes illustrating differences between proactive and inactive responses

Category—Subcategory	Proactive responses	Inactive responses
Trigger	Normative motivation: "I want to die reassured... Every investment we consider has to be sustainable. The three sustainability dimensions are not enough anymore." (IV12)	Instrumental motivation: "The big consideration behind all measures is always the economic rationale." (IV01)
Scanning—Scope	Detailed scan: "Of course, I took every form of energy into consideration, earth, solar, wind, and rain. I nearly used each of them." (IV05)	Limited scan: "We are not well informed about environmental technologies." (IV10)
Scanning—Sources	Internal expertise: "I am relatively deeply integrated into the operations. That is why I see a lot of issues... I do that for myself firstly." (IV13)	External sources: "We regularly participate in energy consultations... We receive a lot of suggestions from others because we visit many other companies." (IV02)
Scanning—Approach	Active approach: "I always searched and asked. And when you search and ask a lot, then you find people and information." (IV04)	Passive approach: "Somehow, I have to deal with, that I again have to pay two or three percent more for energy, which is a large factor." (IV08)
Interpretation—Renewable energy valuation	Positive: "I would do it again and say that the investment was worthwhile." (IV09)	Negative: "If it were up to me, I would have cut the governmental funding for photovoltaic power 10 years ago. The way it currently works is the biggest nonsense." (IV11)
Interpretation—Sense of control	High sense of control: "You have to do everything and must be able to do everything." (IV13)	Low sense of control: "I only have work, I only have costs, and we are flooded with legal requirements. To do something beside the daily business is hardly possible." (IV08)
(In)action—Risk	Risk tolerant: "Last year we turned our cooling system upside down. Everything, really everything... This is like open heart surgery." (IV09)	Risk adverse: "The technology has not been applied on a wide scale before. That is why we refrained from such an investment." (IV08)
(in)action—Novelty	Innovative: "When the Chamber of Commerce comes up with a new idea, they often say that I have probably adopted it already." (IV12)	Conservative: "It is not like, I sit down every day and inform myself about what is new." (IV10)
(In)action—Level of commitment	Highly committed: "If you say you are not able to do something, then you are always right. The one who says that will not even try to do something new. The other guys will try until it works. It is simple." (IV12)	Uncommitted: "We once joined a certain project. This project failed when we stopped participating, because the certification process was extremely difficult and time-consuming for us." (IV02)

As the first individual determinant, managers' technological expertise was essential in explaining why managers succeeded to install renewable energy technologies. Technological expertise influences the sensemaking process in three distinct ways. First, technological expertise reinforces the scanning phase, as opportunities need to be recognized in order to induce a dedicated interpretation and company action. It strengthens the managers' ability to recognize opportunities adequately. Second, the sense of control is connected to the interpretation of technological complexity in respective issues. We observe how managers with proactive responses interpret technologically sophisticated opportunities. Conversely, managers with inactive responses possess limited technological expertise, which is reflected in their lower sense of control. Third, technological expertise influences action. When proactive managers implemented renewable energy technologies, they possessed an adequate base of knowledge to handle and install these technologies. Even

if the installation and maintenance of such technologies is not complex, a low technological expertise can lead to a higher perceived effort. Thus, we suggest the following proposition:

Proposition 1 (P1): Managers' lack of technological expertise in climate-friendly technologies increases the likelihood of climate inaction in all phases of the sensemaking process.

Second, sensemaking describes how individuals perceive their environment, create meaning out of what they perceive, and counteract discrepancies between expectations and reality. Managers' strong sustainability orientation acts as a powerful sensemaking trigger. This normative trigger leads to a proactive and dedicated search for information. For example, this normative trigger leads proactive managers to value renewable energies positively as they represent a

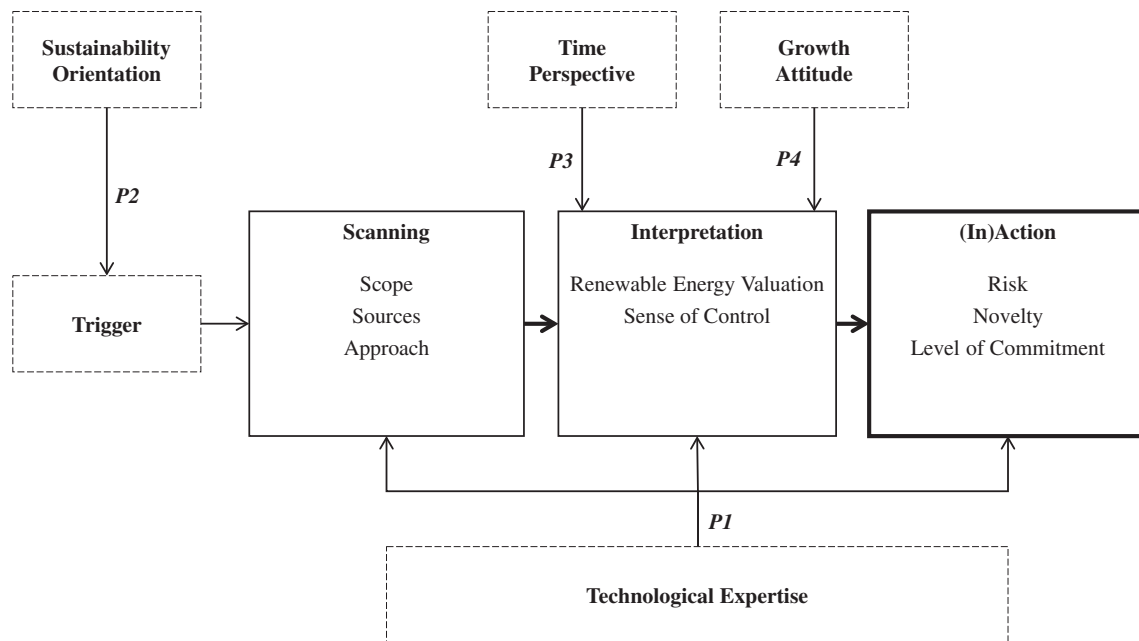


FIGURE 2 Framework of the sensemaking process regarding climate inaction

necessary part of their sustainability orientation. To achieve their company vision, they also accept additional costs. In contrast, managers with inactive responses do not accept potential losses when considering sustainability-oriented business practices. The great impact of the sustainability orientation on the sensemaking process is also explicit in the level of commitment that the managers present. Hence, we propose:

Proposition 2 (P2): Managers' weak sustainability orientation increases the likelihood of climate inaction due to the perception of impending financial losses as a sensemaking trigger.

Third, the link between individual or organizational time perspective and companies' sustainability practices has recently gained attention. Researchers propose that short-term thinking can be the basis for a lack of pro-environmental behavior. Our research indicates a similar result: we find that time perspective is directly linked to the interpretation of climate change related practices. Every climate-friendly practice is a form of investment. Next to the upfront investments, the resulting financial gains and the amortization period are important decision-making criteria. At this stage, the time perspective affects the investment valuation. Short-term thinkers tend to interpret long-term investments negatively, such as unattractive amortization rates of renewable energy generation, while managers with long-term investment orientation will acknowledge the value in these investments. Thus, we suggest the following proposition:

Proposition 3 (P3): Managers' short-term investment orientation increases the likelihood of climate inaction due to perceived tensions when interpreting economic and environmental goals.

Finally, managers' economic growth ambition influences their selection of evaluation criteria and their respective thresholds during the business case interpretation. Managers with proactive responses expressed a balanced or low-growth ambition, also known as the subsistence business model, which implies that they prefer sustainability practices that have potential long-term, qualitative benefits rather than immediate economic growth focusing on short-term profits (Morris, Schindehutte, & Allen, 2005). Moreover, they accept potential costs that generate qualitative improvements in the end. This subsistence model affects the sensemaking process in several ways. First, managers' striving for a subsistence model integrates environmental aspects into their valuation. Second, managers with a subsistence model conduct a cumulative financial analysis, meaning that they add up the financial gains of several sustainable practices to calculate a cumulated payback. Some projects garner high paybacks, while others might be average in terms of potential profits or may even yield losses. Third, managers with a subsistence model consent have higher risk and financial thresholds, which are more conducive to sustainable practices that do not provide swift and great financial paybacks. The overall picture is that they accept the general growth paradigm but not at any cost to the natural environment.

In contrast, managers with inactive climate responses aimed for rapid economic growth and adopt practices that consider growth in terms of production or sales. Therefore, they rarely include environmental aspects into their valuation of renewable technologies. We argue that growth ambition influences the managers' interpretations, since such an ambition sways managers' investment decisions and prioritization among the economic, environmental, and social dimensions, which is expressed in the following proposition:



Proposition 4 (P4): Managers' strong economic growth ambition increases the likelihood of climate inaction due to perceived tensions when interpreting economic and environmental goals.

6 | CONCLUSION

Business responses to climate change have increasingly gained attention; however, the explained differences of proactivity and climate inaction have been limited to the organizational and institutional levels. This article proposes that climate inaction also occurs on the microlevel, where individual determinants that influence the sensemaking phases can explain inaction. The empirical results highlight individual determinants that influence the sensemaking phases considering the installation of renewable energy technologies, including technological expertise, sustainability orientation, time perspective, and economic growth attitude. These findings provide several implications for corporate management, policy-making, and future research on business responses to climate change.

From a managerial perspective, the connection between managers' sensemaking and climate inaction has become more distinct in this study for several reasons. First, it demonstrates how technological expertise and sustainability orientation affect the perception of tensions in the scanning and interpretation phases. It appears that sustainability orientation influences the scanning phase, which thus affects the interpretation and action phases. Second, it reveals how time perspective and economic growth attitude have a significant effect on perceived tensions in the interpretation phase. Managers' time perspective is extremely important, especially when interpreting the amortization rates on potential investments. In the context of this article, a shorter time perspective, especially for investments, may have serious consequences in increasing tensions between economic and environmental goals for renewable energy generation.

From a policy-making perspective, this article proves that favorable regulations and external financial incentives are not always sufficient to enact far-reaching transformations, even in the context of Germany's energy transition. While the actual figures regarding the installation of on-site renewable energy technologies remain low, governments could do more to generate positive interpretation through softer policies, that is, through educational programs that complement the existing regulations and incentives. In certain cases, additional financial assistance programs may spark further considerations to install renewable energy technologies. However, local and national government agencies should become more involved in awareness raising programs through various educational initiatives, such as sponsored seminars, training sessions, and conferences (Steurer, Martinuzzi, & Margula, 2012).

Finally, this article seeks to encourage future research in related topics, namely how individual determinants influence managerial sensemaking on the microlevel, including the consideration of paradoxical tensions, for example, between environmental and economic goals. Individual determinants most likely affect the interpretation and actions taken toward corporate sustainability, including business

responses to climate change (Delmas & Montes-Sancho, 2010). Even though we limit our study to individual managers in SMEs and one climate-friendly activity (i.e., the installation of renewable energy technologies), our results provide the first exploration of individual determinants on a salient issue, namely climate inaction. Future studies could test our suggested propositions using quantitative methods, such as linear regressions and binary logit models. Additionally, further research could build upon our findings toward other carbon management practices on the microlevel. Finally, research should expand on individual determinants of the sensemaking process in managerial responses to other sustainability-related fields with high levels of uncertainty, such as biodiversity and climate adaptation.

ORCID

Timo Busch  <https://orcid.org/0000-0001-6405-5252>

Matthew Johnson  <https://orcid.org/0000-0001-6491-2082>

REFERENCES

- Amran, A., Ooi, S. K., Wong, C. Y., & Hashim, F. (2016). Business strategy for climate change: An ASEAN perspective. *Corporate Social Responsibility and Environmental Management*, 23(4), 213–227. <https://doi.org/10.1002/csr.1371>
- Angus-Leppan T., Benn S., & Young, L. (2010). A sensemaking approach to trade-offs and synergies between human and ecological elements of corporate sustainability. *Business Strategy and the Environment*. <http://dx.doi.org/10.1002/bse.675>.
- Aragon-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of Management Review*, 28(1), 71–88. <https://doi.org/10.5465/amr.2003.8925233>
- Banerjee, S. B. (2001). Managerial perceptions of corporate environmentalism: Interpretations from industry and strategic implications for organizations. *Journal of Management Studies*, 38(4), 489–513. <https://doi.org/10.1111/1467-6486.00246>
- Bansal P., & Roth, K. (2000). Why Companies Go Green: A Model of Ecological Responsiveness. *Academy of Management Journal*, 43(4), 717–736. <http://dx.doi.org/10.5465/1556363>.
- Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review*, 32(3), 794–816. <https://doi.org/10.5465/amr.2007.25275520>
- Barter, N. (2016). Strategy textbooks and the environment construct: Are the texts enabling strategists to realize sustainable outcomes? *Organization & Environment*, 29, 332–366. <https://doi.org/10.1177/1086026616638130>
- BDEW. (2018). Electricity price analysis. Retrieved from www.bdew.de/service/daten-und-grafiken/bdew-strompreisanalyse/
- BMWi. (2018). *Facts and figures of energy data—National and international developments*. Berlin: Author.
- Bonacchi, M., & Rinaldi, L. (2007). DartBoards and clovers as new tools in sustainability planning and control. *Business Strategy and the Environment*, 16(7), 461–473. <https://doi.org/10.1002/bse.596>
- Bundesnetzagentur. (2018). *Monitoring report*. Bonn: Author.
- Caloghirou, Y., Kastelli, I., & Tsakanikas, A. (2004). Internal capabilities and external knowledge sources: Complements or substitutes for innovative performance? *Technovation*, 24(1), 29–39. [https://doi.org/10.1016/S0166-4972\(02\)00051-2](https://doi.org/10.1016/S0166-4972(02)00051-2)
- Daddi, T., Ceglia, D., Bianchi, G., & de Barcellos, M. D. (2019). Paradoxical tensions and corporate sustainability: A focus on circular economy business cases. *Corporate Social Responsibility and Environmental Management*, 26(4), 770–780. <https://doi.org/10.1002/csr.1719>

- Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review*, 9(2), 284–295. <https://doi.org/10.5465/amr.1984.4277657>
- Delmas, M. A., & Montes-Sancho, M. J. (2010). Voluntary agreements to improve environmental quality: Symbolic and substantive cooperation. *Strategic Management Journal*, 31(6), 575–601. <https://doi.org/10.1002/smj.826>
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550. <https://doi.org/10.5465/amr.1989.4308385>
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25–32. <https://doi.org/10.5465/amj.2007.24160888>
- Flick, U., von Kardoff, E., & Steinke, I. (2004). *A companion to qualitative research*. London: SAGE Publications Ltd.
- Fraunhofer, I. S. E. (2018). *Stromgestehungskosten erneuerbarer Energien*. Freiburg: Fraunhofer.
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge, UK: Cambridge University Press. www.cambridge.org/9780521151740.
- Gao, J., & Bansal, P. (2013). Instrumental and integrative logics in business sustainability. *Journal of Business Ethics*, 112(2), 241–255. <https://doi.org/10.1007/s10551-012-1245-2>
- Gersick, C. J. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*, 31(1), 9–41. <https://doi.org/10.5465/256496>
- Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What passes as a rigorous case study? *Strategic Management Journal*, 29(13), 1465–1474. <https://doi.org/10.1002/smj.722>
- Greenberger, D. B., & Strasser, S. (1986). Development and application of a model of personal control in organizations. *Academy of Management Review*, 11(1), 164–177. <https://doi.org/10.5465/amr.1986.4282657>
- Griffith, T. L. (1999). Technology features as triggers for sensemaking. *Academy of Management Review*, 24(3), 472–488. <https://doi.org/10.5465/amr.1999.2202132>
- Hahn, T., & Aragón-Correa, J. A. (2015). Toward cognitive plurality on corporate sustainability in organizations: The role of organizational factors. *Organization & Environment*, 28(3), 255–263. <https://doi.org/10.1177/1086026615604446>
- Hahn, T., Figge, F., Pinkse, J., & Preuss, L. (2010). Trade-offs in corporate sustainability: You can't have your cake and eat it. *Business Strategy and the Environment*, 19(4), 217–229. <https://doi.org/10.1002/bse.674>
- Hahn, T., Preuss, L., Pinkse, J., & Figge, F. (2014). Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames. *Academy of Management Review*, 39(4), 463–487. <https://doi.org/10.5465/amr.2012.0341>
- Helms-Mills, J. (2003). *Making sense of organizational change*. London: Routledge.
- Hemingway, C. A., & MacLagan, P. W. (2004). Managers' personal values as drivers of corporate social responsibility. *Journal of Business Ethics*, 50(1), 33–44. <https://doi.org/10.1023/B:BUSI.0000020964.80208.c9>
- Hockerts, K. (2015). A cognitive perspective on the business case for corporate sustainability. *Business Strategy and the Environment*, 24(2), 102–122. <https://doi.org/10.1002/bse.1813>
- Hoffman, A. J. (2011). Talking past each other? Cultural framing of skeptical and convinced logics in the climate change debate. *Organization & Environment*, 24(1), 3–33. <https://doi.org/10.1177/1086026611404336>
- Howard-Grenville, J., Buckle, S. J., Hoskins, B. J., & George, G. (2014). Climate change and management. *Academy of Management Journal*, 57(3), 615–623. <https://doi.org/10.5465/amj.2014.4003>
- Jeswani, H. K., Wehrmeyer, W., & Mulugetta, Y. (2008). How warm is the corporate response to climate change? Evidence from Pakistan and the UK. *Business Strategy and the Environment*, 17(1), 46–60. <https://doi.org/10.1002/bse.569>
- Kolk, A. (2012). Towards a sustainable coffee market: Paradoxes faced by a multinational company. *Corporate Social Responsibility and Environmental Management*, 19(2), 79–89. <https://doi.org/10.1002/csr.289>
- Kolk, A., & Pinkse, J. (2005). Business Responses to Climate Change: Identifying Emergent Strategies. *California Management Review*, 47(3), 6–20. <http://dx.doi.org/10.2307/41166304>.
- Kvale, S. (2008). *Doing interviews*. London: SAGE Publications Ltd.
- Lee, S. Y. (2012). Corporate carbon strategies in responding to climate change. *Business Strategy and the Environment*, 21(1), 33–48. <https://doi.org/10.1002/bse.711>
- Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45, 123–152. <https://doi.org/10.1007/s11077-012-9151-0>
- Levy, D. L., & Kolk, A. (2002). Strategic responses to global climate change: Conflicting pressures on multinationals in the oil industry. *Business and Politics*, 4(3), 275–300. <https://doi.org/10.2202/1469-3569.1042>
- Lyneis, J., & Serman, J. (2016). How to save a leaky ship: Capability traps and the failure of win-win investments in sustainability and social responsibility. *Academy of Management Discoveries*, 2(1), 7–32. <https://doi.org/10.5465/amd.2015.0006>
- Maitlis, S. (2005). The social processes of organizational sensemaking. *Academy of Management Journal*, 48(1), 21–49. <https://doi.org/10.5465/amj.2005.15993111>
- Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations: Taking stock and moving forward. *The Academy of Management Annals*, 8(1), 57–125. <https://doi.org/10.5465/19416520.2014.873177>
- Manning, P. K. (1982). Analytic induction. In P. K. Manning & R. B. Smith (Eds.), *A handbook of social science methods* (pp. 273–302). Cambridge, MA: Ballinger.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: SAGE Publications Ltd.
- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: Toward a unified perspective. *Journal of Business Research*, 58(6), 726–735. <https://doi.org/10.1016/j.jbusres.2003.11.001>
- Onkila, T. (2016). Employee rhetoric in the acceptance or rejection of corporate environmentalism. *Organization & Environment*, 30, 142–161. <https://doi.org/10.1177/1086026616633270>
- Pinkse, J., & Kolk, A. (2010). Challenges and trade-offs in corporate innovation for climate change. *Business Strategy and the Environment*, 19(4), 261–272. <https://doi.org/10.1002/bse.677>
- Plambeck, N., & Weber, K. (2010). When the glass is half full and half empty: CEOs' ambivalent interpretations of strategic issues. *Strategic Management Journal*, 31(7), 689–710. <https://doi.org/10.1002/smj.835>
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E. F., ... Nykvist, B. (2009). A safe operating space for humanity. *Nature*, 461(7263), 472–475. <https://doi.org/10.1038/461472a>
- Rouleau, L., & Balogun, J. (2011). Middle managers, strategic sensemaking, and discursive competence. *Journal of Management Studies*, 48(5), 953–983. <https://doi.org/10.1111/j.1467-6486.2010.00941.x>
- Schmid, E., Knopf, B., & Pechan, A. (2016). Putting an energy system transformation into practice: The case of the German Energiewende. *Energy Research & Social Science*, 11, 263–275. <https://doi.org/10.1016/j.erss.2015.11.002>
- Sharma, S. (2000). Managerial interpretations and organizational context as predictors of corporate choice of environmental strategy. *The Academy of Management Journal*, 43(4), 681–697. <https://doi.org/10.5465/1556361>
- Slawinski, N., Pinkse, J., Busch, T., & Banerjee, S. B. (2017). The role of short-termism and uncertainty avoidance in organizational inaction on climate change: A multi-level framework. *Business & Society*, 56(2), 253–282. <https://doi.org/10.1177/0007650315576136>



- Salzmann O., Ionescu-somers A., & Steger, U. (2005). The Business Case for Corporate Sustainability: Literature Review and Research Options. *European Management Journal*, 23(1), 27–36. <http://dx.doi.org/10.1016/j.emj.2004.12.007>.
- Stanny, E., & Ely, K. (2008). Corporate environmental disclosures about the effects of climate change. *Corporate Social Responsibility and Environmental Management*, 15(6), 338–348. <https://doi.org/10.1002/csr.175>
- Starbuck, W. H., & Milliken, F. J. (1988). Executives' perceptual filters: What they notice and how they make sense. In D. Hambrick (Ed.), *The executive effect: Concepts and methods for studying top managers* (pp. 35–65). Greenwich, CT: JAI Press.
- Steger, U. (1993). The greening of the board room: How German companies are dealing with environmental issues. In K. Fischer & J. Schot (Eds.), *Environmental strategies for industry—International perspectives on research needs and policy implications* (pp. 147–166). Washington, DC: Island Publishing.
- Steurer, R., Martinuzzi, A., & Margula, S. (2012). Public policies on CSR in Europe: Themes, instruments, and regional differences. *Corporate Social Responsibility and Environmental Management*, 19(4), 206–227. <https://doi.org/10.1002/csr.264>
- Stuart, D., Schewe, R. L., & McDermott, M. (2012). Responding to climate change: Barriers to reflexive modernization in U.S. agriculture. *Organization & Environment*, 25(3), 308–327. <https://doi.org/10.1177/1086026612456536>
- Sullivan, R., & Gouldson, A. (2016). Comparing the climate change actions, targets and performance of UK and US retailers. *Corporate Social Responsibility and Environmental Management*, 23(3), 129–139. <https://doi.org/10.1002/csr.1364>
- Thomas, J. B., Clark, S. M., & Gioia, D. A. (1993). Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. *Academy of Management Journal*, 36(2), 239–270. <https://doi.org/10.5465/256522>
- Van der Byl, C. A., & Slawinski, N. (2015). Embracing tensions in corporate sustainability: A review of research from win-wins and trade-offs to paradoxes and beyond. *Organization & Environment*, 28(1), 54–79. <https://doi.org/10.1177/1086026615575047>
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409–421. <https://doi.org/10.1287/orsc.1050.0133>
- Weinhofer, G., & Hoffmann, V. H. (2010). Mitigating climate change—how do corporate strategies differ? *Business Strategy and the Environment*, 19(2), 77–89. <https://doi.org/10.1002/bse.618>
- Whiteman, G., Walker, B., & Perego, P. (2013). Planetary boundaries: Ecological foundations for corporate sustainability. *Journal of Management Studies*, 50(2), 307–336. <https://doi.org/10.1111/j.1467-6486.2012.01073.x>
- Yin, R. K. (2003). *Case study research: Design and methods* (Vol. 5, 3rd ed.). Thousand Oaks, CA: SAGE Publications Ltd.

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