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From negative to positive sustainability performance measurement and assessment? A qualitative inquiry drawing on framing effects theory

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Abstract

Current approaches to sustainability performance primarily capture the reduction of negative impacts, but are rather silent about creating positive sustainability performance (PSP). This paper draws on framing effects theory to argue why interviewees in our abductive single case study of the life cycle of a laundry detergent struggled to identify PSP. Based on the theory and our findings, we argue that negative sustainability performance is a "sticky" frame in individual perception, and propose a research agenda for PSP that discusses three research routes and key determinants (i.e., systemic mindsets, collective goals and collaboration, and a balanced view for sustainable value) to explain how the dominant negative frames can be overcome to advance PSP. This study contributes to the sustainability management and performance literature by illuminating a current blind spot (PSP) and how the dominant negative frame can be overcome.

KEYWORDS

business models, life cycle assessment, performance measurement, sustainability assessment, sustainability impact, sustainability management

> Perhaps the most dangerous misconception about the climate crisis is that we have to "lower" our emissions. Because that is far from enough. … The fact that we are speaking of "lowering" … is perhaps the greatest force behind business as usual. **Greta Thunberg**.[1]

1 | INTRODUCTION

Sustainability management aims to improve the ecological and social sustainability performance of organizations (Hörisch et al., 2015). In the pursuit of measuring and assessing sustainability performance, existing research and practices have often focused on how to become less unsustainable rather than on how to positively progress to sustainable development (e.g., Ergene et al., 2020; Schaubroeck & Rugani, 2017; Silva et al., 2019). Current conceptualizations of sustainability performance primarily capture negative ecological or social impacts (e.g., accidents and fatalities, carbon dioxide emissions, or the total cost of ownership), as is evident in well-known footprint approaches that aim to reduce the respective impacts (e.g., water footprint, carbon footprint). However, simply "mitigating harms and doing less bad will not be enough" (Ergene et al., 2020, p. 10) to

Abbreviations: LCSA, life cycle sustainability assessment; PSP, positive sustainability performance.

[1]https://twitter.com/gretathunberg/status/1110438260793327616, tweet from March 26, 2019, accessed December 4, 2021.

achieve sustainability. In particular, George (2001) argued that merely mitigating unsustainability lacks ambition and has slim potential to contribute to sustainable development because such practices miss opportunities for positive sustainability performance (PSP). Such opportunities include reframing sustainability as a "positive, moving-towards future state" (McDonald, 2018, p. 1359), understanding both negative and positive sustainable value (Méndez-León et al., 2021), and developing sustainable business models that deliver ecological or social benefits rather than merely counteracting negative business outcomes (Bocken et al., 2014).

Although researchers have increasingly urged that PSP be emphasized (e.g., Beske-Janssen et al., 2015; Delmas et al., 2013; Ekener et al., 2018), scholarly discussion has had slow development, remains fragmented, and lacks a consensus on characterizing PSP (Kühnen & Hahn, 2018a). For example, Minor and Morgan (2011) argued that PSP results from avoiding or reducing negative footprints or unsustainable activities. Schaubroeck and Rugani (2017, p. 1472) criticize such a perspective of measuring and assessing sustainability performance as incomplete because of its prevalent "paradigm that mankind damages the environment … [and therefore neglects] the other side" of capturing potential benefits for the environment and human well-being. Although fixing or reducing negative sustainability problems is a valuable objective, they constitute only one aspect of sustainability. Di Cesare et al. (2018) xis positive when it goes beyond compliance with regulations or standards, and Kroeger and Weber (2015) go even further and consider PSP as the degree to which organizations actively benefit society and help stakeholders meet their needs.

Against this background, we initially set out to identify how PSP is characterized in practice. Using an extensive single case study of the life cycle of a laundry detergent and the perceptions of actors throughout all stages of the product life cycle, we initially aimed to comprehensively study performance, which has often neglected certain stages (especially the product-use phase: Blass & Corbett, 2018; Fransson et al., 2013; Seuring, 2008). However, during the data collection process, we realized that the practitioners encountered great difficulties when asked to identify aspects of PSP. This triggered our research questions: (1) Why do practitioners encounter difficulties in identifying PSP? And (2) how can these difficulties be overcome to arrive at a holistic perspective of sustainability performance that includes PSP?

Owing to the challenges encountered when exploring PSP in practice, the study evolved in the manner of an abductive research approach (Timmermans & Tavory, 2012; Van Maanen et al., 2007). By drawing on psychological research on framing effects (e.g., Levin et al., 1998; Sparks & Ledgerwood, 2017; Tversky & Kahneman, 1981), we found that the current framing of sustainability performance in corporate practice appeared to be thoroughly stuck in the negative frame, and that supply chain actors have difficulties in switching to the positive frame. Generally, negative frames tend to be "stickier" than positive frames (Boydstun et al., 2019; Ledgerwood & Boydstun, 2014; Sparks & Ledgerwood, 2017), which could explain the practitioners' difficulties in identifying PSP in our case study. Thus, reframing sustainability performance is particularly difficult because of the challenges of moving from a negative to a positive frame. Therefore, we built on insights from psychological research on how to break up negative framing to guide our discussion on how to identify and anchor PSP in corporate practice as an important step toward holistic sustainability performance measurement.

With these insights, we contribute to the fragmented scholarly discussion of positive corporate contributions to sustainability. Furthermore, by drawing on psychological framing effects theory, we illustrate how a rather technical approach—the measurement and assessment of sustainability performance—is embedded in our social construct of sustainability performance, which has previously neglected core aspects that are relevant to sustainable development. By shedding light on PSP and how PSP can be uncovered in people's minds, research and practical efforts for sustainable development might prove more fruitful.

The remainder of this paper is organized as follows. In Section 2, we first review the relevant literature from the emerging field of PSP before introducing framing effects theory. Then, we explain the method for collecting and qualitatively analyzing the case study data in Section 3. Section 4 presents the results on how the participants struggled to identify PSP as well as instances in which they overcame their struggles, and provides rare examples of PSP. Building on these results, we propose a research agenda for PSP in Section 5. Specifically, we identify three research routes based on three key determinants that explain how firms can effectively advance PSP. We close the study with implications for practice in Section 6, and offer our conclusions in Section 7.

Across the study, each of our main chapters was structured to mirror the following two essential lines. The first part in each main chapter addresses issues and possibilities of identifying PSP, and the second part discusses the relevance of framing for overcoming PSP, which is highlighted as a meta-level perspective culminating in the research agenda in the discussion section.

2 | CONCEPTUAL AND THEORETICAL BACKGROUND

2.1 | Positive sustainability performance in the literature

Studying and understanding sustainability performance requires a systemic orientation to review organizations' interrelated sustainability impacts and effects throughout product life cycles and supply chains (Blass & Corbett, 2018). According to Nilsson-Lindén et al. (2019), product life cycle management typically focuses on the minimization of environmental and socioeconomic burdens associated with products throughout the entire life cycle, involving all product chain actors from raw material extraction, manufacturing, logistics, use, and end-of-life (i.e., disposal or reuse/recycling). Common approaches, such as life cycle sustainability assessment (LCSA)

provide instruments for gaining knowledge on sustainability impacts along the product chain and for a systemic analysis of performance aspects from a life cycle or supply chain perspective (Kühnen & Hahn, 2018b). Many authors have claimed that LCSA must cover both positive and negative impacts (Onat et al., 2017; Souza et al., 2015; Tarne et al., 2017).

The reduction of a negative impact refers to the avoidance or decline of a burden (e.g., emissions or workplace accidents). Such a reduction appears to be regularly (mis)understood as a distinct positive benefit in sustainability research (e.g., Fichter, 2002; Lion et al., 2013; Ny et al., 2006). While the reduction of a negative sustainability impact is undoubtedly an important aspect in the quest to utilize more sustainable forms of production, the mere reduction of such a burden will not necessarily lead to an adequate sustainable outcome if, for example, the remaining impacts still have detrimental effects on planetary boundaries (for the latter concept, see Steffen et al., 2015) or do not safeguard decent living conditions. Thus, we argue that the reduction of negative impacts constitutes only one side of sustainability performance, and that this side is well established. For example, measuring the reduction of a negative impact is widespread and has a relatively long tradition (see, e.g., Čuček et al., 2012; Wackernagel & Rees, 1998). However, this aspect does not paint a full picture. Thus, there is a lack of understanding of what constitutes a positive impact, which constitutes the other side of sustainability performance (Kühnen & Hahn, 2018a).

The increase in the positive impact of creating benefits and adding value (and not merely reducing negative burdens) has been explored to a limited extent in current literature. We regard this as a shortcoming because the increase in positive impacts might present a path to "transformative change" to overcome the current dominant paradigm (Wittneben et al., 2012, p. 1431). From an ecological perspective, for example, the approach of creating benefits can be seen as remediation, which concerns the restoration of damage caused by others (Harclerode et al., 2016). Other initial, and currently fuzzy, considerations of positive ecological impacts include ecosystem services (O'Shea et al., 2013) and carbon sequestration (Brandão et al., 2013). Other elements of PSP could lie in the creation and sharing of knowledge that yields mutual benefits (Lombardi & Laybourn, 2012). Such benefits or added value can be regarded as an active progression to both sustainable development and sustainability transformation (Ferns & Amaeshi, 2019; Schaltegger & Burritt, 2014).

Against this background, we use the following broad definition of PSP to identify the respective elements in our case study data: *PSP complements the prevailing perspective of reducing negative sustainability burdens by emphasizing the efforts that aim to increase the beneficial sustainability of products, processes, and organizations overall, thus resulting in the creation of positive impacts*. So far, the focus of the existing PSP literature has been quite limited, and has often focused solely on isolated applications of the individual (i.e., the ecological, economic, and social) dimensions of sustainability (Ekener et al., 2018). Furthermore, previous research has highlighted the missing insights on PSP as a gap (Ekener et al., 2018; Petti et al., 2018; Sala et al., 2013), which informed our initial approach to the case study. Our initial findings underlined the dominant understanding of PSP as reducing the negative impacts on sustainability performance. To derive at explanations for this unsatisfactory state of sustainability performance measurement how it can potentially be overcome, we drew on framing effects theory during data analysis.

2.2 | The framing effects theory as an anchor to explain the struggles in identifying positive sustainability performance

Throughout our case study interviews, we repeatedly encountered obstacles that prevented the participants from clearly pinpointing the elements of PSP. We set out to identify the reason for these struggles, arguing that they could be due to the framing effects inherent in sustainability performance. Information can often be framed in more than one way, and the way in which information is framed affects human behavior and decision-making (Chong & Druckman, 2007; Kühberger, 1998; Tversky & Kahneman, 1981). For example, when information about a medical procedure is presented to a patient in terms of the likelihood of survival instead of the probability of death, it significantly affects the patient's positive or negative decision about the procedure (Marteau, 1989). The former translates into a positive frame (i.e., the likelihood of survival), whereas the latter translates into a negative frame (i.e., the likelihood of death), even though the underlying data could be identical (50% chance of survival vs. 50% chance of death).

Approaches to framing usually differentiate between positive (i.e., "gain") and negative (i.e., "loss") frames (Levin et al., 1998; Tversky & Kahneman, 1981). Framing, in general, is a much-discussed phenomenon in the academic literature (Cornelissen & Werner, 2014), including sustainability management research (e.g., Dzhengiz et al., 2021; Muñoz & Cohen, 2018; Thøgersen, 2006). Muñoz and Cohen (2018), for example, differentiate sustainable entrepreneurship frames, arguing that entrepreneurship has moved from being the cause of presenting a solution in terms of sustainability. Others use framing as analytical perspective to assess the way "green" products and organizations are presented in the media (Thøgersen, 2006) or to illustrate how nongovernmental organizations (NGOs) use emotional framing to address multinational companies (Dzhengiz et al., 2021). Furthermore, Lahtinen and Yrjölä (2019) use a framing perspective to analyze how managers frame conventional and sustainability management activities differently when aiming for sustainability transformation. These examples show that framing has been used in various analytical approaches in the academic literature on sustainability management. This study specifically focused on psychological framing. A specific case of framing is attribute framing, which states that a specific object—in our case, sustainability performance—has specific characteristics that can be described using negative or positive connotations (Levin et al., 1998). Attribute framing focuses on the evaluation of a situation where "positive encoding highlights positive aspects of the information and negative encoding highlights negative

aspects" (Levin et al., 1998, p. 161). Framing effects influence, for example, consumer choices regarding sustainability issues (e.g., Van de Velde et al., 2010).

Levin et al. (1998) found, in their meta-analysis, that the "positive framing of attributes leads to more favorable evaluations than negative framing" (p. 161). Furthermore, once a certain type of framing has been created, it might be difficult to switch perspectives and adopt a different frame (Sparks & Ledgerwood, 2017). In particular, a negative frame tends to remain more dominant in an individual's mind than a positive frame, thus making the conversion from a negative frame to a positive frame more difficult (Boydstun et al., 2019; Cacioppo et al., 1997; Ledgerwood & Boydstun, 2014). However, related psychological research has identified circumstances in which it is easier to break negative frames and identify positive frames (Boydstun et al., 2019; Sparks & Ledgerwood, 2017). Sparks and Ledgerwood (2017) argued that in a new environment that offers a reward, the negativity bias can be overcome, as when exploring this new environment, humans seek positive objectives despite negative risks (Cacioppo et al., 1997; Cacioppo & Berntson, 1994).

During this study, we build upon these elements of framing effect theory to discuss why the prevailing narrative on sustainability performance is strongly embedded in the negative frame, as illustrated above. Further, we use this theory to develop a research agenda on how to overcome the dominant negative frame in sustainability performance measurement.

3 | METHOD

3.1 | Research approach

This study was based on a single case study of the life cycle of a laundry detergent. Siggelkow (2007) argued that single case studies are especially suitable for making conceptual contributions by providing concrete and vivid illustrations of abstract conceptualizations, whereas purely conceptual arguments are often speculative. Inductive case study research has previously provided a basis for theory-building (Eisenhardt, 1989; Ketokivi & Choi, 2014). In our setting, we establish propositions for future research routes developed from our findings as a basis for subsequent studies (Gianni & Gotzamani, 2015). We argue that the life cycle of laundry detergents as a case study is a suitable setting for generating such generalized future research routes, because laundry detergents are widespread everyday products (Seuring et al., 2003). In this regard, Yin (2018) finds that a single case study is an appropriate approach to capture the typical or representative circumstances of an everyday situation. Moreover, Seuring et al. (2003) suggest that the laundry detergent industry often sets examples for other chemical manufacturing and consumer goods industries to develop new approaches for analyzing and managing sustainability performance. Typically, sustainability management research uses the entire product lifecycle as an entity to be analyzed (Seuring, 2004). Accordingly, we considered the entire product life cycle of a laundry detergent as a suitable unit of analysis for examining PSP production and consumption.

We deliberately chose a conventional everyday product to ensure that each participant already had extensive and truly lived experience with the product. Thus, the interviewees were able to share rich elaborations and answers. Furthermore, we deliberately engaged with stakeholders from one specific laundry detergent supply chain, so that our interviewees initially talked about the same company with its products and implications. We chose this approach to trigger concrete thoughts about sustainability, instead of merely talking about an abstract idea, because we deemed this helpful for engagement with sustainability performance. The focal company in our case study was one of the leading manufacturers of laundry detergents, and its key product was a bestselling brand worldwide. We chose this approach to avoid a bias in our sampling and interview questions (i.e., we did not talk about a specifically "green" or "sustainable" version of a laundry detergent).

As illustrated in the introduction, we initially set out to identify how PSP is characterized in practice, but realized during data collection that the practitioners encountered great difficulties when asked to identify aspects of PSP. Therefore, we chose to apply an abductive research design for data analysis (Timmermans & Tavory, 2012; Van Maanen et al., 2007). Abduction combines theory with empirical data in the research process, thus offering flexibility to refocus and adjust during data collection and analysis (Dubois & Gadde, 2002). It builds on an inductive analysis of the data and calls for an iterative process in which emerging conceptualizations are systematically combined with existing theories throughout the research phase (Timmermans & Tavory, 2012). Specifically, we began our inquiry with the aim of identifying the elements of PSP in our case study, as illustrated in Section 3.2. We then observed the aforementioned difficulties during the initial review of the data, as discussed in more detail in Section 3.3. Based on this insight, we decided to inspect the sample more closely against the background of the framing effects theory. Thus, we engaged in an iterative process and analyzed the phenomenon that emerged from initial induction against the background of insights from the literature (Reichertz, 2009; Van Maanen et al., 2007) to answer the following research questions: (1) Why do practitioners encounter difficulties in identifying PSP? and (2) How can these difficulties be overcome to arrive at a holistic perspective of sustainability performance that includes PSP? Abductive analysis requires a systematic combination of empirical data and theory throughout the research process, and has the flexibility to refocus and adjust during data collection and analysis (Dubois & Gadde, 2002). As such, we deemed the abductive approach to be particularly suitable for the discussion of the participants' struggles in identifying PSP in light of framing effects theory.

3.2 | Data collection: Identifying positive sustainability performance

To collect data from case studies, interviews are commonly employed to provide scientific explanations based on an understanding of

Product Life Cycle Stages	Interviewee Codes (Job Positions)	Organization	Organizational Sales & Number of Employees/Members	Organizational Number of Sites & International Activity
1st Tier Supplier	**I1** (Global sustainability manager); **I2** (Regional key account manager); **I3-5** (Head of customer service; Customer service employee; Customer service employee)	Supplier of chemical materials	60 Billion Euro 122,000 employees	350 production sites in 80 countries
Manufacturing	**I6** (Plant director); **I7** (Deputy operations manager of powder detergent production and head of engineering); **I8** (Team leader of liquid detergent production); **I9** (Operator of liquid detergent filling); **I10** (Director of research and development for process technology); **I11-12** (Chief medical officer of occupational health; Senior manager of corporate health)	Laundry detergent manufacturer	19 Billion Euro 53,000 employees	185 production sites in 120 countries
Transportation & Logistics	**I13** (Director of international planning and logistics steering); **I14** (Manager of international planning and logistics steering)			
Wholesale & Retail	**I15** (Project manager sustainability)	Wholesale company	36 Billion Euro 152,000 employees	1,048 stores in 35 countries
	I16 (Store manager); **I17** (Store manager); **I18** (Store manager)	Drugstore company	11 Billion Euro 62,000 employees	3,600 stores in 13 countries
Use	**I19** (General executive director); **I20** (President of local association); **I21** (President of local association)	Professional association of housekeepers	Information not publicly available	300 local associations in Germany
	I22 (Eco-toxicologist)	Regional consumer advice center	37 Million Euro 2000 employees	16 consumer centers of the German federal states
Disposal	**I23** (Director of waste and water management); **I24** (Waste management specialist engineer); **I25** (Waste management engineer); **I26** (Environmental compliance director)	Laundry detergent manufacturer	See above	See above
	I27 (Director of chemical and biological laboratories)	Urban wastewater treatment facility	127 Million Euro 500 employees	German municipal facility

FIGURE 1 Overview of interview partners (interviewees). *Note*: Interviewees I3–I5, and I11–I12 were interviewed collectively in group sessions

people's lived experiences (Kvale, 2007). Therefore, this study conducted semi-structured, face-to-face interviews to obtain an in-depth understanding of the accounts of the daily tasks performed by actors during the entire life cycle of a laundry detergent (including the system boundaries, from raw material sourcing to the usage and end-of-life stages). Thus, our study aimed to answer the call for research that "involves actors from several stages of a product chain" (Fransson et al., 2013, p. 311; see also Seuring, 2008). We drew on actors' perspectives to develop an understanding of how their subjective perceptions and experiences affected their understanding of PSP in the production and consumption of laundry detergents.

We adhered to the following structured approach to ensure replicability. The participants were selected using purposeful sampling (Palinkas et al., 2015; Patton, 2015). Figure 1 provides an overview of the participants selected as key informants for in-depth information[2]. The participants represented actors from all product life cycle stages of a laundry detergent in Germany. Managers, workers, and consumers from the seven organizations agreed to participate in the interviews. These organizations (and their respective interviewees) were all directly engaged in the life cycle of the respective laundry detergent as our focal entity in our single case study. Thus, while all were economically independent, the different organizations were all elements of the same supply chain and product life cycle. All actors had professional expertise in each life-cycle stage, comprising the production and consumption of the case product. As each actor was professionally engaged in the relevant aspects of the industry (including consumers who were members of a professional association of housekeepers), they could be expected to have broad perspectives on the production and consumption of the case product. In sum, we selected

[2]The stages of *1st Tier Suppliers*, *Manufacturing*, and *Transportation & Logistics* are self-explanatory. However, some further explanations on the other stages are in order:
Wholesale & Retail: The 'Wholesale company' specialized in B2B transactions to commercial customers and small businesses. The 'drugstore company' sells to end consumers. We considered interviewees from this stage as important because distributors represent the direct link between manufacturers and product users. Typically, they are the first point of contact for consumers to share their daily lived experiences with the product (even before sharing experiences with the manufacturer itself). Therefore, we expected the interviewees to share insights from two perspectives: (1) Their own experiences in terms how selling and distributing the product affected their own personal life; and (2) Experiences on positive impacts based on their unique interfacing role with product users.
Users: The "professional association of housekeepers" is an association of private consumers and product users (colloquially, one could use the term "housewives," however, that would be inappropriate, because many of them are male and have a professional education in home economics). The association is an NGO that engages with governmental authorities and industry institutions to discuss (sustainability) topics such as experienced health and safety issues or general suggestions to improve product (sustainability) performance. We also approached the consumer advice center because some of its employees have an eco-toxicology education. Thus, we aimed at triangulating the (health-and-safety) insights gained from daily practices with scientific experiences ('hard facts') on the toxicity profile of laundry detergents.
Disposal: Investigating the disposal stage is a critical requirement when analyzing sustainability impacts. In the case of laundry detergents, there are typically two disposal aspects to be considered: (1) Disposal during the manufacturing processes; we interviewed persons working in waste management at the manufacturer. (2) Disposal after use. The issue here is that one cannot simply ask product users and consumers about sustainability impacts resulting from disposal, because they do not dispose the product themselves. Instead, the laundry detergent is automatically disposed down the drain after use by the washing machine. Therefore, we interviewed an expert on the chemical and biological processes from the local urban wastewater treatment facility.

TABLE 1 Overview of additional sources of evidence used for triangulation of data

Sources of evidence	Description of relevant evidence
Peer-reviewed literature and gray literature about a product sustainability performance measurement approach developed by a first-tier supplier of chemical material	The approach combines environmental life cycle assessment, life cycle costing, and social life cycle assessment into an integrated approach to assess and manage products and processes. It captures negative and positive sustainability performance aspects such as environmental burdens and reliefs, costs, direct investments in developing countries, or risks and benefits when using a product. Since 2002, the approach is under continuous development, testing, and refinement in cooperation with research institutes.
Sustainability reports (2012, 2014, 2016) and annual report (2016) published by the laundry detergent manufacturer Website information by the laundry detergent manufacturer	The sources describe the general concept of a PSP measurement approach developed by the laundry detergent manufacturer. The practice approach assesses product sustainability performance from two performance perspectives. First, a positive sustainability value perspective (including the overarching categories of performance, health and safety, and social progress) of products along the complete product life cycle. Second, it juxtaposes the positive value perspective with a negative footprint perspective (including the overarching categories of materials and waste, energy and climate, and water and wastewater) to achieve a balanced and comprehensive picture of product sustainability performance. Thus, hot-spots can be identified as levers to increase the value of the product and simultaneously reduce its footprint.
Documentation of a stakeholder workshop (2012) by the laundry detergent manufacturer in collaboration with a non-profit think tank	A stakeholder workshop was held with the aim of refining the PSP measurement approach and to critically reflect the approach against opinions of relevant stakeholder groups including industry representatives from the laundry detergent life cycle, NGO representatives, experts from standardization organizations, and sustainability experts. The workshop revolved around questions regarding the general design and framework of the approach, the identification and selection of relevant assessment categories and indicators, the potential weighing of assessment categories and indicators, and the visualization of assessment results.

key informants based on their ability to act as sources of in-depth information about their lived experiences, which shaped their perception of sustainability during the production and consumption of the laundry detergent. Data collection involved 24 interview sessions with 27 participants (conducted in Germany).[3]

Through a set of open-ended questions, participants were encouraged to engage in open and unrestrained face-to-face dialogue with the interviewer (Horton et al., 2004). First, we asked about their tasks and activities during the product life cycle (i.e., their tasks within the system boundaries of supplying commodities and services, as well as the manufacture, transportation, distribution, selling, use, and disposal of laundry detergent). The rationale behind this question was to provide a narrative stimulus to trigger dialogue between the interviewer and participants. Second, the participants were asked to elaborate on what they perceived to be positive sustainability aspects when they performed their tasks, and how they would further improve those aspects if they did not address them after the first narrative stimulus. The rationale behind this question was to guide participants' understanding of their connections to and experience with the product using a deliberately positive perspective to facilitate the identification of positive sustainability benefits. To complement this aspect, we also asked about negative sustainability aspects. Participants were free to provide comprehensive and open narrative descriptions that they considered relevant. The interviews were conducted between March and December 2014 and lasted between 50 min (minimum) and 3 h (maximum), with an average of 75 min. All the interviews were digitally recorded and transcribed. Overall, the interview data collected comprised approximately 308,000 words (nearly 34 hours) of interview material regarding the laundry detergent product life cycle.

Multiple data types were used for triangulation (Jick, 1979). Specifically, we triangulated the primary interview data with information from the organizations' sustainability reports and websites as well as internal documents from the laundry detergent manufacturer. Table 1 describes the additional sources of evidence used for the triangulation. Cross-checking the interview narratives against additional sources of evidence helped us to provide a stronger substantiation of our findings.

3.3 | Data analysis: Toward discovering framing effects

As mentioned above, we initially approached our data in an entirely inductive manner to identify how the interviewees, along the life cycle

[3]On two occasions, the participants were interviewed in groups of two and three persons.

of our case study on laundry detergents, perceive PSP. Two authors independently coded the three initial transcripts. Structural dimensions (i.e., analytical categories) emerged from the interview material under investigation (Seuring & Gold, 2012). We openly coded our data using informant-centric terms that addressed elements of PSP from the interviewees' verbal accounts (see, e.g., Strauss & Corbin, 1998). During coding, we consolidated participants' responses into recurring aspects (Duriau et al., 2007; Mayring, 2010). The resulting codes were discussed repeatedly among the same two authors of the paper to align mental schemes (Seuring & Gold, 2012) before the remaining 21 transcripts were coded and analyzed—again by the same two authors.

Once we had realized the participants' struggles in identifying PSP (see Table A1), we decided to engage in abductive reasoning. As mentioned above, abductive analysis has the flexibility to refocus and adjust during data analysis (Dubois & Gadde, 2002). We tied the identified struggles to framing effects theory and to the dominant negative frame. All interviews were fully recoded again in line with the principles of abductive analysis, which builds on inductive analysis (Timmermans & Tavory, 2012). At this point, the third author challenged existing assumptions and again brought our mutual understanding of the data to a higher level. The aim now was to first portray the instances of the struggles, and then to investigate the instances in which the participants seemed to "break free" of the dominant cognitive frame and find patterns in the potential reasons. In an iterative process, we classified these patterns into reasons for the dominance of negative framing, as shown in Table A2. To achieve this, we created an extensive list of codes using informant-centric terms to discover as many concepts as possible that are present in our raw data (see Strauss & Corbin, 1998). These codes were then reduced, grouped, and aggregated, considering insights from framing effects theory. To summarize, we engaged in an iterative process and analyzed phenomena that emerged from induction against the background of insights from the literature (Reichertz, 2009; Van Maanen et al., 2007).

In terms of validity, verbal expressions about activities are pivotal for examining sustainability performance in production and consumption, as words are vehicles for developing and facilitating a conceptual understanding of performance (e.g., Holttinen, 2010; Nørreklit et al., 2016). To ensure the reliability of the analysis, we analyzed the data using the iterative process of manual coding and recoding. To lower the subjectivity in the interpretation of the data, two or three coders (i.e., the authors) were assigned to code the transcripts (Barratt et al., 2011). All authors of this study have vast experience in the field of sustainability management and are skilled in interview-based research and qualitative content analysis (Duriau et al., 2007). To further reduce discrepancies in coders' mental schemes (Seuring & Gold, 2012), the coding process consisted of testing, comparison, discussion, and retesting over different stages. During this process, the coding guidelines were gradually refined based on the exchange and aligned interpretations of the respective codes, which further increased internal validity. Finally, to ensure scientific rigor, abduction requires analyzing the phenomena emerging from induction against the background of insights from literature in an iterative process (Reichertz, 2009; Van Maanen et al., 2007), which we accomplished throughout the process as outlined above.

4 | RESULTS[4]

This section provides an analysis of the participants' individual responses and subjective perceptions when asked about the positive aspects of and potential improvements throughout the life cycle of laundry detergent. We critically analyzed whether the participants truly addressed the positive side of sustainability performance or the reduction of negative burdens. We found that participants generally identified examples that aligned with negative perspectives. The following illustrates the dominant negative framing in the interviews. It then showcases the struggles exposed by the participants when asked about PSP to demonstrate the hurdle of breaking free from the negative framing of sustainability performance. In some cases, the participants began to overcome negative framing and discussed some positive examples, even though we often noticed their swift return to negative framing. We then analyzed the reasons for the instances in which the participants broke free of dominant negative framing.

4.1 | Evidence of the dominant negative framing of sustainability performance

When asked to identify the positive aspects or benefits to society or other stakeholders, most participants responded with examples that were predominantly negatively framed. Most participants from *first-tier suppliers* described conventional sustainability management practices to reduce negative burdens when asked about PSP, for example, replacing harmful ingredients with more environmentally friendly ingredients. Participants from the *manufacturing firm* argued that the production and composition of the laundry detergent changed considerably in terms of efficiency. Participant I10 reported that the manufacturers "aim to reduce the washing temperature required because, especially in the usage phase of laundry detergents, a lot of energy is consumed." The participants emphasized the reduction of washing temperatures, energy consumption, and product weight points as conventional burden-reducing and efficiency-enhancing performance aspects, instead of actual PSP. Another emphasized aspect was the importance of monitoring health and safety to avoid and reduce accidents, diseases, and fatalities at work. Again, the participants' emphasis on avoiding and reducing physical hazards illustrated a reduction in harm.

The participants from the *transportation and logistics* stages characterized their sector as highly competitive and price-sensitive, with small margins. Accordingly, the company tended to base its business behavior and sustainability-related decision making on economic

[4]All quotations throughout this section were translated by the authors.

factors. As an example of improving sustainability performance, participant I13 pointed to increasing efforts to monitor

> how our logistics service partners deal with [their employees]. … Especially in some countries, the logistics sector has a bad reputation for cheap labor. Of course, we are interested in an economic approach. However, we are always interested in long-term relationships with our service providers. Such a long-term relationship involves the service provider complying with our requirements and values in terms of social aspects.

This again points to a reduction in the observed incidence of noncompliance with sustainability standards by logistics service providers.

The participants from the *wholesale and retail* stages emphasized that retailers played a pivotal role in delivering positive sustainability benefits because they could advise and educate consumers to make more affordable and sustainable choices. However, when asked to specifically name the elements of PSP, participants' responses again largely showed negative framing. For example, Participant I15 noted that "many consumers have problems with laundry detergent at low temperatures because they never learned that [the detergent would still] work." Similarly, Participant I17 said that "the customer still does not know how to properly dose laundry detergents." These quotations also illustrate that the educational approach of these actors toward the consumer can address the reduction of negative burdens to improve conventional resource and energy efficiency issues.

The *product users* and members of the professional association of housekeepers often viewed the aspects of sustainable customer education and the functional convenience and washing performance of the laundry detergent as potential positive sustainability benefits. However, these aspects address the general nature of the product and the reduction in negative burdens. For example, regarding the reduction in energy use, participant I20 noted that "it is astonishing that you can get [so many clothes] clean at low temperatures," thereby revealing that it appeared difficult for consumers to recognize the potential sustainability benefits of the laundry detergent. For *disposal*, Participant I27 revealed that a prominent expression of PSP was that the "biological degradability of laundry detergents has improved considerably in the last 35 years," pointing to yet another example of the reduction of negative burdens. Table A1 provides further illustrative quotations from the data on the dominant negative frame throughout the various stages of the product life cycle.

In summary, the participants throughout the entire product life cycle understood sustainability performance primarily with a focus on the reduction of negative sustainability burdens. We argue that this is because the participants were stuck in the dominant negative frame of sustainability performance. To portray this dominant negative frame more clearly, we will illustrate how and why the participants struggled when asked about PSP in the next subsection.

4.2 | The struggle to identify positive sustainability performance

From the 27 interviews, we identified many quotations that illustrated participants' struggles. In general, they struggled to identify positive impacts because thinking and talking about such impacts seemed to be new and sometimes even "bizarre" (Participant I07) or "weird" (participant I09) concepts for them, thus showing that they had an overall lack of understanding when asked about positive effects. Moreover, it was "difficult" (Participant I24) for them to think of something positive. Even when specifically asked about positive benefits for employees or other individuals, Participant I24 regularly asked, "What exactly do you mean" and "Benefits in how far?" and did not provide any answers or ideas related to PSP, which indicated their profound struggle. In most cases, the participants immediately came up with a negatively connotated example that they expressed and described clearly. Overall, most participants referred to the reduction of negative burdens when attempting to talk about positive sustainability benefits. For example, after they were asked a question on the positive aspects of the laundry detergent during the production stage, Participants I11 and I12 initially responded with a brief positive economic example (i.e., competitiveness), but immediately switched back to focusing on negative social examples (i.e., layoffs, more shift work, health consequences, and consequences for employees' self-perception).

Our results suggest that the overemphasis on reducing negative ecological and social damage along the supply chain came from a lingering, asymmetric, and overproportioned perception of negative situations and examples in the participants' cognition. For example, when asked if there was ever "a situation in the laundry detergent context that stuck in your mind in a particularly positive way" (Interviewer), Participant I16 clearly indicated the lingering effect by stating that "generally, the negative memories stick in your mind more than the positive ones." Regarding the participants' asymmetric and overproportionate perception of negative frames, Participants I11 and 12 emphasized the following:

> Often, one has the impression that there are only problems. However, the problems we are discussing are about 20% of the whole, and 80% of it is good. After all, people have a secure job here, many social benefits, and a company pension in addition to the statutory pension—many benefits that are sometimes overlooked.

Moreover, our results indicate that some aspects of organizational decision-making generally contribute to imbalanced negative perceptions. For example, a perceived imbalance in organizational decision-making that favors conventional profit-oriented decisions (leading to ecological and social damage) can contribute to negative framing in people's cognition. For instance, when asked, "Are there any positive aspects that would improve the laundry detergent?" (Interviewer), Participant I07 extensively stated:

> There is one point that can be improved from an ecological perspective. …We consume resources because we put dyed powder sprinkles into the product, and we operate plants that consume energy to produce these sprinkles—just so that marketing can tell the customer, "Look, there are red sprinkles in the product; this is good for washing colored clothes." For a normal detergent, there are blue sprinkles in it [to signal] power through oxygen. Blue indicates oxygen and red indicates color. Therefore, we are not yet completely honest in terms of sustainability. Such aspects have been introduced to support marketing. Years ago, we produced all of our products without colored sprinkles. This makes both the production process and life 100% easier. … However, the effect on the customer is valued very highly, which is why we put these sprinkles in. Ultimately, I am just the manufacturer, and I was told, "We need a powder with blue sprinkles in it." However, from an ecological viewpoint and from a consumer's [washing performance] viewpoint, this makes no sense.

This trade-off and imbalance between sustainability decisions and conventional business decisions undermines the credibility of the management's commitment to sustainability (e.g., "We are not yet completely honest with ourselves in terms of sustainability"—Participant I07), which again highlights the dominance of negative framing in participants' cognition. Table A2 provides further illustrative quotes from the data on participants' struggles to identify the positive impacts.

4.3 | Breaking free from the dominant negative frame

Despite the dominance of negative frames, our results showed that certain triggers can convert people's cognition into positive framing. People seem to be better able to convert to a positive frame when they see that the management's long-term commitment and systemic mindset toward sustainability is a driver of innovation in new product development, as indicated by participant I07:

> Many years ago, we started a program in which we wanted to launch a green product on the market that we advertised as sustainable, used only renewable raw materials, was not harmful to wastewater, and so on. It was not accepted by the consumer at that time … but we continued along the same path. In the development of new products, we pay close attention to the fact that raw materials are renewable, are not harmful to the environment, and are safe for the user. I believe that this is already an important factor and that the industry is also committed to such things.

In terms of specific sustainability dimensions, we found that the ecological dimension occasionally became a conversion driver, especially when the participants reflected on new business opportunities based on systemic circular economy goals and collaboration. For example, Participant I27 highlighted the following positive ecological benefit of an organization's waste becoming another organization's feedstock:

> The manufacturing of laundry detergents involves the processing of fats, primarily vegetable fats, into the final product that is biologically degradable. We made a public agreement that allowed [the manufacturer] to pipe a higher amount of fat into the sewer system. These vegetable fats become food for our biology [and bacteria] that we use for nitrogen elimination. This means that nitrogen compounds in the wastewater were eliminated and transformed into atmospheric nitrogen. … Compared with other wastewater treatment facilities, we do not need to add alcohol to wastewater. … Thus, we get the food used for nitrogen elimination for free, so … we have a win–win relationship.

In light of the often imbalanced view of sustainability that sometimes tends to neglect the social sustainability dimension, it seemed that socioeconomic examples were effective in triggering some participants to think about various positive impacts, such as satisfaction, social interplay at work, income, job creation, and health and safety. Participants I11 and 12 emphasized:

> We should not only look at the negative aspects. We also have many employees who like coming to work; they enjoy their work because they have a nice supervisor and colleagues. This social aspect plays a significant role. Or simply the fact that work conveys meaning if you have the right job, so you can say, "I make a valuable contribution here." In a social context, this also means that you can earn enough money and that you are part of a team, society, and so on. These aspects have positive effects on health and well-being.

When positive sustainability impacts were identified, most participants started discussing abstract and high-level benefits. For example, Participant I07 pointed to the value of sustainability in general as a positive aspect:

> I have never thought about the social benefits of detergent products. Now that we are speaking about it, I would say that there really is one: we have made a commitment to being sustainable, to develop processes and products that do not use up resources, and to create jobs for employees without damaging their health.

To overcome the abstractness of sustainability as a positive high-level aspect, some participants developed an interesting cognition process

in which they compared a hypothetical situation (A) in which the product existed with an alternative situation (B) in which the product did not exist (as a baseline) to grasp the advantages or positive value offered by the product (such as saving time) when compared to the baseline. Participant I16 elaborated on that idea:

> Currently, nobody goes to a river with a washboard. I think that the time factor is different today from what it used to be. Today, both partners often work and the washing machine runs in the meantime. The clothes are then hung up in the evening and dried overnight so that you can wear them again the next day. This was not possible 200 years ago.

Thus, participant I16 pinpointed positive impacts by comparing the differences between situations A and B. However, only a few participants were able to convert their cognition into positive framing.

5 | IMPLICATIONS FOR RESEARCH

Although we initially set out to identify PSP in practice, the data collection clarified that the participants struggled to identify PSP. This led us to question why this was, and why they largely failed to identify PSP. Our findings illustrate that the participants had a predominantly negative frame of sustainability performance and struggled to overcome it, which framing effects theory argues is due to the "stickiness" of the negative frame. Accordingly, these "prevalent discourses and practices … limit our abilities to think and act outside of existing approaches" (Ergene et al., 2020, p. 3), presenting current (cognitive) barriers (Wright et al., 2012). However, in some cases, the participants broke free of the dominant-negative paradigm and were able to identify some examples of PSP. Drawing on the psychological literature, framing effects theory, and interview findings, certain conditions and determinants appear to help convert an individual's negative (loss) frame into a positive (gain) frame, which seems to be important when identifying PSP.

The psychological literature and framing effects theory argue that novel environments (e.g., novel business settings) that offer rewards and reflect gains are strong triggers that can convert negative (loss) frames into positive (gain) frames (Boydstun et al., 2019; Sparks & Ledgerwood, 2017), which is crucial for people to identify PSP. A review of the examples of when the participants broke free of the dominant negative frame also points to novel business opportunities that have a "gain" framing. One example is the above-mentioned win–win situation, when an organization's waste becomes another organization's input.

Therefore, in the following, we develop three research routes by linking our findings to framing effects theory and discussing how novel, sustainable business opportunities help convert negative (loss) frames into positive (gain) frames. The discussion is structured along three key determinants from a conversion that emerged from our results. It allows us to critically hypothesize how businesses might switch their cognitive frames to identify and manage positive contributions to sustainable development along their product life cycles, beyond the mere reduction of their own negative performance. Future research is challenged to investigate how pursuing sustainable business opportunities can offer a path to both positive-gain-framing and understanding of PSP for both incumbents and start-ups (e.g., sustainable entrepreneurs). Each section concludes with a promising future *research route* for understanding and advancing PSP.

5.1 | Research route 1 for advancing positive sustainability performance: Developing systemic mindsets

PSP relates to the benefits offered to customers, stakeholders, and the natural environment based on products, services, or product–service systems (Lüdeke-Freund et al., 2019; Zufall et al., 2020). The focus on benefits—"gains" in the framing effects literature—counters the predominant focus on a negative impact or "loss," which was heavily emphasized in the current study's interview results. However, the loss perspective is an important starting point for creating positive gains. For example, even life cycle sustainability assessment experts in business and academia mix the negative and positive sides, and therefore struggle to conceptualize PSP beyond the reduction of negative burdens (Kühnen et al., 2019).

A closer look at the "loss" perspective is an important step after reducing or eliminating a firm's negative performance to find ways for the firm to remediate and transform the damage caused by others (Kühnen et al., 2019). Thus, remediation presents an important bridge between the "loss" and "gain" perspectives, since negating the "loss" of others presents the creation of "gains." Kühnen et al. (2019) argue that the remediation (i.e., "healing": Norris, 2013) or regeneration of the damage caused by others represents the foundation for firms to transform this burden into a positive benefit for society and the environment. Consequently, this regenerative practice ultimately contributes to the health of socioecological systems (Hahn & Tampe, 2020; Landrum, 2018).

However, such a new systemic mindset and framing that systematically and constantly reevaluates measures to regenerate the damage caused by others is not easily integrated in a conventional business environment, such as the laundry detergent segment. Therefore, the PSP in our case study was truncated to reduce a firm's negative performance. Advancing beyond the avoidance and reduction of a firm's negative performance toward reducing the damage caused by others represents an important starting point and a key determinant for the transition toward understanding and managing PSP. Key aspects might be feedback and creation of corporate awareness of the effects of sustainability activities (Hörisch et al., 2020). Therefore, we propose the following:

Research route 1: Recognizing and advancing PSP requires fundamentally different mindsets in managerial decision-making. Systematically thinking about improving the performance of others can shift

mindsets toward positive-gain-framing. Therefore, future research could investigate the processes, drivers, and barriers of shifting conventional business mindsets toward a more systemic mindset when developing concepts to improve the sustainability performance of both firms and other parties.

5.2 | Research routes 2 and 3 for advancing positive sustainability performance: How framing changes key elements of business models

To effectively deliver PSP, industry systems need to establish appropriate means for coordinating and managing inter-organizational collaborations and innovation to achieve collective goals (Manzhynski & Figge, 2020; Norris et al., 2021). Collaboration is a key factor in achieving mutually beneficial (i.e., symbiotic and systemic) sustainability benefits for both businesses and society (Lombardi & Laybourn, 2012). Correspondingly, researchers discuss stakeholder engagement culminating in active collaboration as a precondition and determinant for creating sustainability benefits (Bocken et al., 2014; Boons & Lüdeke-Freund, 2013).

In the current study, the participants from the disposal stage of the laundry detergent life cycle highlighted collaboration as an important determinant that could help the progression of the reduction of harm and waste to the delivery of positive sustainability benefits. The participants revealed a collaboration between the laundry detergent manufacturer and an urban wastewater treatment facility, through which the manufacturer's waste became the feedstock of the wastewater treatment facility. Bansal and McKnight (2009) argued that such exchange relationships focus on the overarching system of firms in which various mutually beneficial collaborations facilitate sustainable development. Through collaboration, the respective firms can realize and implement positive externalities if they are governed by a deliberate and strategic goal and "logic of effectuation" (Bansal & McKnight, 2009, p. 32), which aims to effectively realize and implement sustainability benefits. In the current study, such framing implies that the system of related firms consciously designs products that primarily aim to extract value from waste, as opposed to the conventional logic of designing products that primarily aim to fulfill customer requirements (Bansal & McKnight, 2009). Therefore, we propose the following:

Research route 2: The creation of PSP requires a collective goal and collaboration among stakeholders across product life cycle stages. Business collaborations can potentially convert people's cognition processes toward positive-gain-framing, especially if these collaborations have dedicated ecological goals (e.g., intensifying circular economy relationships) and/or socioeconomic goals (e.g., people's satisfaction, fair income, job creation, and health and safety) among partners. Therefore, future PSP research could investigate the processes, drivers, and barriers of how focal firms establish collaborative partnerships along the product life cycle to deliver a previously defined positive benefit.

Furthermore, the creation of conventional business value relates to the distribution of economic costs and revenues among the actors involved in the supply chain (i.e., how they earn money: Lüdeke-Freund et al., 2019; Zufall et al., 2020). Most supply chains of fast-moving consumer goods such as laundry detergents build on conventional linear production systems (Lüdeke-Freund et al., 2019). In such systems, financial considerations are the driving force behind managerial decision-making (Heikkurinen et al., 2019), while sustainability considerations require a focus on "win–win" situations in which environmental and social activities pay off economically (Hahn et al., 2010). Consequently, most efforts to improve sustainability performance aim to optimize efficient resource flows when there is an easily conceivable relationship between a social/ecological issue and the financial bottom line (Heikkurinen et al., 2019). Therefore, sustainability performance improvements in conventional production systems typically occur in the efficiency sphere (Bocken et al., 2014), for example, by reducing waste or cost per unit of production through improved resource intensity. The literature has argued that the development of sustainable value will require companies to commit to going beyond the conventional question of "how to earn money" (Lüdeke-Freund et al., 2019). To go beyond conventional business framings, Stubbs and Cocklin (2008) emphasize that sustainable production systems must focus on the "respect for persons and nature, and social equity" (p. 104) and on "improving the welfare of their stakeholders" (p. 106). Recently, Méndez-León et al. (2021) suggested that sustainable value creation requires both a positive value perspective next to a negative value perspective (focused on value destroyed).

Therefore, we propose the following:

Research route 3: PSP requires new organizational framings that go beyond the logic of avoiding and reducing burdens based on efficiency considerations in a conventional produce-and-use-up business set-up (i.e., going beyond the conventional doing-less-bad logic). A balanced distribution of financial, social, and ecological costs and benefits among the actors involved in the production system could convert their cognitive processes toward positive-gain-framing. Therefore, future research should investigate the processes, drivers, and barriers of how a balance of financial, ecological, and social considerations in managerial decision-making could determine the distribution of costs and revenues across stakeholders throughout the product life cycle.

6 | IMPLICATIONS FOR PRACTICE

The current framing of sustainability performance focuses on reducing negative sustainability impacts rather than on the creation of PSP. However, from a business perspective, PSP has several merits. The individual research routes might be interesting for corporate practice as well. In the following section, we highlight a number of initiatives to provide initial thoughts on how to develop our understanding of PSP. A rudimentary beginning lies in the perception that reducing

something negative is positive. In our case study, this has been discussed along the lines of reducing negative sustainability impacts as a positive contribution to sustainable development. For example, looking at sustainability problems of global meat production, the animal feed producer BEWITAL agri has developed innovative feedstuffs such as rumen-stable feed products that reduce ruminal methane production and nitrogen secretions (BETIWAL agri, 2021). Thus, BEWITAL agri creates a positive impact by reducing the carbon footprint of others, specifically, farmers.

Furthermore, collaboration and innovative approaches to addressing negative social or environmental burdens can result in positive impacts. For example, both Boons and Lüdeke-Freund (2013) and Stubbs and Cocklin (2008) highlight Interface Inc. as an exemplary company regarding collaboration for sustainability. The company reports an innovative partnership with the Zoological Society of London. This partnership has created a socially inclusive business that builds on a community-based supply chain in the Philippines and in Cameroon, which buy discarded fishing nets (a major source of plastic pollution and a hazard to marine life) from local fishers. The nets were recycled into a new yarn for Interface's modular carpet tiles (Interface, n.d.). This different approach or framing of sustainable business cooperation resonates with the socioeconomic benefits (e.g., job creation, income, and satisfaction) and circular economy collaboration identified in our interview results.

Finally, novel approaches for capturing value can open interesting avenues for companies to advance PSP—for example, by drawing on multiple stakeholders (Norris et al., 2021) or creating regenerative business (Hahn & Tampe, 2020). The final example illustrates a new business model that allows stakeholders (customers) to capture value. Bayer CropScience implemented a carbon market initiative that allows its customers (i.e., farmers) to generate carbon credits by adopting climate-smart practices, thus creating a new revenue stream on-farm. By enrolling in this Bayer Carbon Program, US farmers can earn money per acre, per year, if they adopt no-till/strip-till and cover cropping to drive on-field carbon sequestration while supporting yield potential, nutrient management, and soil health over time (Bayer AG, 2020).

7 | CONCLUSION

In this study, we addressed why practitioners encounter difficulties in addressing PSP, and how this can be overcome. Building on a qualitative case study from the laundry detergent industry, we identify the struggles of business actors in characterizing and identifying PSP. Specifically, we illustrate their practical difficulties in moving beyond the burden-oriented perspective of reducing harm to a more holistic PSP perspective. Furthermore, by drawing on framing effects theory, we link our findings to theoretical reasoning to show that sustainability performance is currently "stuck" in a negative frame, which needs to be resolved to advance PSP. We identified instances in which participants overcame this negative framing and identified the rudimentary elements of PSP. Framing effect theory argues that novel environments that offer rewards can facilitate the breaking of a negative frame and offer a path to cognitively develop a positive frame. Based on the insights from when the participants were able to overcome an apparently prevalent negative frame, we offer a research agenda that explains why conventional production systems struggle to move beyond the reduction of harm, and how firms can achieve mutually positive effects for businesses, society, and the environment.

This study advances the existing literature by proposing a new aspect of sustainability performance. We contribute to theory development by bridging the framing effects theory with the literature on (positive) sustainability performance. Specifically, we discuss the determinants that might help convert negative (loss) frames into positive (gain) frames. However, our study has several limitations. The empirical findings presented herein are based on a case study of the life cycle of a laundry detergent. Therefore, future researchers should use our proposed research agenda as a starting point for testing and developing comprehensive PSP characteristics in other case study contexts (e.g., in production–consumption systems that build on truly sustainable business models instead of conventional business models) or in a cross-product research setting. Furthermore, the challenge remains for future researchers to develop valid and reliable measurement approaches and indicators of PSP (Schaubroeck & Rugani, 2017). The development of such general measures of PSP would promote standardization, which, in turn, would facilitate the comparison of empirical results as well as theory development in the emerging field of PSP. Moreover, developing consensual measures of PSP will support managers in recognizing the relationship between business conduct and positive sustainability benefits for society.

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REFERENCES

Bansal, P., & McKnight, B. (2009). Looking forward, pushing back and peering sideways: Analyzing the sustainability of industrial symbiosis. *Journal of Supply Chain Management*, *45*(4), 26–37. https://doi.org/10.1111/j.1745-493X.2009.03174.x

Barratt, M., Choi, T. Y., & Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, *29*(4), 329–342. https://doi.org/10.1016/j.jom.2010.06.002

Bayer AG. (2020). Bayer takes steps to make carbon sequestration a farmer's newest crop opportunity. Retrieved from https://media.bayer.com/baynews/baynews.nsf/id/Bayer-takes-steps-to-make-carbon-sequestration-a-farmers-newest-crop-opportunity

Beske-Janssen, P., Johnson, M. P. & Schaltegger, S. (2015). 20 years of performance measurement in sustainable supply chain management: What has been achieved? *Supply Chain Management: An International Journal*, *20*(6), 664–680. https://doi.org/10.1108/SCM-06-2015-0216

BETIWAL agri. (2021). Sustainability and environment. Retrieved from https://bewital-agri.de/en/the-company/sustainability-environment/

Blass, V., & Corbett, C. J. (2018). Same supply chain, different models: Integrating perspectives from life cycle assessment and supply chain management. *Journal of Industrial Ecology*, *22*(1), 18–30. https://doi.org/10.1111/jiec.12550

Bocken, N., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42–56. https://doi.org/10.1016/j.jclepro.2013.11.039

Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, *45*, 9–19. https://doi.org/10.1016/j.jclepro.2012.07.007

Boydstun, A. E., Ledgerwood, A., & Sparks, J. (2019). A negativity bias in reframing shapes political preferences even in partisan contexts. *Social Psychological and Personality Science*, *10*(1), 53–61. https://doi.org/10.1177/1948550617733520

Brandão, M., Levasseur, A., Kirschbaum, M. U. F., Weidema, B. P., Cowie, A. L., Jørgensen, S. V., … Chomkhamsri, K. (2013). Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. *The International Journal of Life Cycle Assessment*, *18*(1), 230–240. https://doi.org/10.1007/s11367-012-0451-6

Cacioppo, J. T., & Berntson, G. G. (1994). Relationship between attitudes and evaluative space: A critical review, with emphasis on the separability of positive and negative substrates. *Psychological Bulletin*, *115*(3), 401–423. https://doi.org/10.1037/0033-2909.115.3.401

Cacioppo, J. T., Gardner, W. L., & Berntson, G. G. G.(1997). Beyond bipolar conceptualizations and measures: The case of attitudes and evaluative space. *Personality and Social Psychology Review: An Official Journal of the Society for Personality and Social Psychology, Inc*, *1*(1), 3–25. https://doi.org/10.1207/s15327957pspr0101_2

Chong, D., & Druckman, J. N. (2007). Framing theory. *Annual Review of Political Science*, *10*(1), 103–126. https://doi.org/10.1146/annurev.polisci.10.072805.103054

Cornelissen, J. P., & Werner, M. D. (2014). Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Academy of Management Annals*, *8*(1), 181–235. https://doi.org/10.1080/19416520.2014.875669

Čuček, L., Klemeš, J. J., & Kravanja, Z. (2012). A review of footprint analysis tools for monitoring impacts on sustainability. *Journal of Cleaner Production*, *34*, 9–20. https://doi.org/10.1016/j.jclepro.2012.02.036

Delmas, M. A., Etzion, D., & Nairn-Birch, N. (2013). Triangulating environmental performance: What do corporate social responsibility ratings really capture? *Academy of Management Perspectives*, *27*(3), 255–267. https://doi.org/10.5465/amp.2012.0123

Di Cesare, S., Silveri, F., Sala, S., & Petti, L. (2018). Positive impacts in social life cycle assessment: State of the art and the way forward. *International Journal of Life Cycle Assessment*, *23*(3), 406–421. https://doi.org/10.1007/s11367-016-1169-7

Dubois, A., & Gadde, L.-E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research*, *55*(7), 553–560. https://doi.org/10.1016/S0148-2963(00)00195-8

Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. *Organizational Research Methods*, *10*(1), 5–34. https://doi.org/10.1177/1094428106289252

Dzhengiz, T., Barkemeyer, R., & Napolitano, G. (2021). Emotional framing of NGO press releases: Reformative versus radical NGOs. *Business Strategy and the Environment*, *30*(5), 2468–2488. https://doi.org/10.1002/bse.2758

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14*(4), 532. https://doi.org/10.2307/258557

Ekener, E., Hansson, J., & Gustavsson, M. (2018). Addressing positive impacts in social LCA: Discussing current and new approaches exemplified by the case of vehicle fuels. *International Journal of Life Cycle Assessment*, *23*(3), 556–568. https://doi.org/10.1007/s11367-016-1058-0

Ergene, S., Banerjee, S. B., & Hoffman, A. J. (2020). (Un)sustainability and organization studies: Towards a radical engagement. *Organization Studies*, *42*(8), 1319–1335. https://doi.org/10.1177/0170840620937892

Ferns, G., & Amaeshi, K. (2019). Fueling climate (in)action: How organizations engage in hegemonization to avoid transformational action on climate change. *Organization Studies*, *42*(7), 1005–1029. https://doi.org/10.1177/0170840619855744

Fichter, K. (2002). E-commerce: Sorting out the environmental consequences. *Journal of Industrial Ecology*, *6*(2), 25–41. https://doi.org/10.1162/108819802763471762

Fransson, K., Brunklaus, B., & Molander, S. (2013). Flows of chemical risk information in the consumer paint product chain. *Journal of Industrial Ecology*, *17*(2), 310–320. https://doi.org/10.1111/j.1530-9290.2012.00542.x

George, C. (2001). Sustainability appraisal for sustainable development: Integrating everything from jobs to climate change. *Impact Assessment and Project Appraisal*, *19*(2), 95–106. https://doi.org/10.3152/147154601781767104

Gianni, M., & Gotzamani, K. (2015). Management systems integration: Lessons from an abandonment case. *Journal of Cleaner Production*, *86*, 265–276. https://doi.org/10.1016/j.jclepro.2014.08.023

Hahn, T., & Tampe, M. (2020). Strategies for regenerative business. *Strategic Organization*, *19*(3), 456–477. https://doi.org/10.1177/1476127020979228

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

Harclerode, M. A., Lal, P., & Miller, M. E. (2016). Quantifying global impacts to society from the consumption of natural resources during environmental remediation activities. *Journal of Industrial Ecology*, *20*(3), 410–422. https://doi.org/10.1111/jiec.12380

Heikkurinen, P., Young, C. W., & Morgan, E. (2019). Business for sustainable change: Extending eco-efficiency and eco-sufficiency strategies to consumers. *Journal of Cleaner Production*, *218*, 656–664. https://doi.org/10.1016/j.jclepro.2019.02.053

Holttinen, H. (2010). Social practices as units of value creation: Theoretical underpinnings and implications. *International Journal of Quality and Service Sciences*, *2*(1), 95–112. https://doi.org/10.1108/17566691011026621

Hörisch, J., Johnson, M. P., & Schaltegger, S. (2015). Implementation of sustainability management and company size: A knowledge-based view. *Business Strategy and the Environment*, *24*(8), 765–779. https://doi.org/10.1002/bse.1844

Hörisch, J., Wulfsberg, I., & Schaltegger, S. (2020). The influence of feedback and awareness of consequences on the development of corporate sustainability action over time. *Business Strategy and the Environment*, *29*(2), 638–650. https://doi.org/10.1002/bse.2394

Horton, J., Macve, R., & Struyven, G. (2004). Qualitative research: Experiences in using semi-structured interviews. In B. Lee & C. Humphrey (Eds.), *The real life guide to accounting research: A behind-the-scenes view of using qualitative research methods* (1st ed.) (pp. 339–357). Elsevier. https://doi.org/10.1016/B978-008043972-3/50022-0

Interface. (n.d.). The net-works program. Retrieved from https://www.interface.com/US/en-US/campaign/negative-to-positive/Net-Works-en_US

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, *24*(4), 602. https://doi.org/10.2307/2392366

Ketokivi, M., & Choi, T. (2014). Renaissance of case research as a scientific method. *Journal of Operations Management*, *32*(5), 232–240. https://doi.org/10.1016/j.jom.2014.03.004

Kroeger, A., & Weber, C. (2015). Developing a conceptual framework for comparing social value creation. *Academy of Management Review*, *40*(1), 43–70.

Kühberger. (1998). The influence of framing on risky decisions: A Meta-analysis. *Organizational Behavior and Human Decision Processes*, *75*(1), 23–55. https://doi.org/10.1006/obhd.1998.2781

Kühnen, M., & Hahn, R. (2018a). From SLCA to positive sustainability performance measurement: A two-tier Delphi study. *Journal of Industrial Ecology*, *in Press*. https://doi.org/10.1111/jiec.12762, *23*, 615, 634

Kühnen, M., & Hahn, R. (2018b). Systemic social performance measurement: Systematic literature review and explanations on the academic status quo from a product life-cycle perspective. *Journal of Cleaner Production*, *205*, 690–705. https://doi.org/10.1016/j.jclepro.2018.08.201

Kühnen, M., Silva, S., Beckmann, J., Eberle, U., Hahn, R., Hermann, C., … Schmid, M. (2019). Contributions to the sustainable development goals in life cycle sustainability assessment: Insights from the handprint research project. *NachhaltigkeitsManagementForum|Sustainability Management Forum*, *27*(1), 65–82. https://doi.org/10.1007/s00550-019-00484-y

Kvale, S. (2007). *Doing interviews*: SAGE Publications. https://doi.org/10.4135/9781849208963

Lahtinen, S., & Yrjölä, M. (2019). Managing sustainability transformations: A managerial framing approach. *Journal of Cleaner Production*, *223*, 815–825. https://doi.org/10.1016/j.jclepro.2019.03.190

Landrum, N. E. (2018). Stages of corporate sustainability: Integrating the strong sustainability worldview. *Organization & Environment*, *31*(4), 287–313. https://doi.org/10.1177/1086026617717456

Ledgerwood, A., & Boydstun, A. E. (2014). Sticky prospects: Loss frames are cognitively stickier than gain frames. *Journal of Experimental Psychology. General*, *143*(1), 376–385. https://doi.org/10.1037/a0032310

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, *76*(2), 149–188. https://doi.org/10.1006/obhd.1998.2804

Lion, H., Donovan, J. D., & Bedggood, R. E. (2013). Environmental impact assessments from a business perspective: Extending knowledge and guiding business practice. *Journal of Business Ethics*, *117*(4), 789–805. https://doi.org/10.1007/s10551-013-1721-3

Lombardi, D. R., & Laybourn, P. (2012). Redefining industrial symbiosis. *Journal of Industrial Ecology*, *16*(1), 28–37. https://doi.org/10.1111/j.1530-9290.2011.00444.x

Lüdeke-Freund, F., Gold, S., & Bocken, N. M. P. (2019). A review and typology of circular economy business model patterns. *Journal of Industrial Ecology*, *23*(1), 36–61. https://doi.org/10.1111/jiec.12763

Manzhynski, S., & Figge, F. (2020). Coopetition for sustainability: Between organizational benefit and societal good. *Business Strategy and the Environment*, *29*(3), 827–837. https://doi.org/10.1002/bse.2400

Marteau, T. M. (1989). Framing of information: Its influence upon decisions of doctors and patients. *The British Journal of Social Psychology*, *28* (Pt 1), 89–94. https://doi.org/10.1111/j.2044-8309.1989.tb00849.x

Mayring, P. (2010). *Qualitative Inhaltsanalyse: Grundlagen und Techniken* (11th ed.). Beltz.

McDonald, P. (2018). Sustainability management: Research insights from social cognitive neuroscience. *Business Strategy and the Environment*, *27*(8), 1355–1367. https://doi.org/10.1002/bse.2184

Méndez-León, E., Reyes-Carrillo, T., & Díaz-Pichardo, R. (2021). Towards a holistic framework for sustainable value analysis in business models: A tool for sustainable development. *Business Strategy and the Environment*. Advance online publication. https://doi.org/10.1002/bse.2871

Minor, D., & Morgan, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review*, *53*(3), 40–59. https://doi.org/10.1525/cmr.2011.53.3.40

Muñoz, P., & Cohen, B. (2018). Sustainable entrepreneurship research: Taking stock and looking ahead. *Business Strategy and the Environment*, *27*(3), 300–322. https://doi.org/10.1002/bse.2000

Nilsson-Lindén, H., Rosén, M., & Baumann, H. (2019). Product chain collaboration for sustainability: A business case for life cycle management. *Business Strategy and the Environment*, *28*(8), 1619–1631. https://doi.org/10.1002/bse.2388

Nørreklit, H., Nørreklit, L., & Mitchell, F. (2016). Understanding practice generalisation: Opening the research/practice gap. *Qualitative Research in Accounting & Management*, *13*(3), 278–302. https://doi.org/10.1108/QRAM-09-2015-0088

Norris, G. A. (2013). The new requirement for social leadership: Healing. In S. Gröschl (Ed.), *Uncertainty, diversity and the common good: Changing norms and new leadership paradigms* (pp. 125–139). Gower Publishing.

Norris, S., Hagenbeck, J., & Schaltegger, S. (2021). Linking sustainable business models and supply chains—Toward an integrated value creation framework. *Business Strategy and the Environment*. Advance online publication. https://doi.org/10.1002/bse.2851, *30*, 3960, 3974

Ny, H., MacDonald, J. P., Broman, G., Yamamoto, R., & Robért, K.-H. (2006). Sustainability constraints as system boundaries: An approach to making life-cycle management strategic. *Journal of Industrial Ecology*, *10*(1–2), 61–77. https://doi.org/10.1162/108819806775545349

Onat, N., Kucukvar, M., Halog, A., & Cloutier, S. (2017). Systems thinking for life cycle sustainability assessment: A review of recent developments, applications, and future perspectives. *Sustainability*, *9*(5), 706. https://doi.org/10.3390/su9050706

O'Shea, T., Golden, J. S., & Olander, L. (2013). Sustainability and earth resources: Life cycle assessment modeling. *Business Strategy and the Environment*, *22*(7), 429–441. https://doi.org/10.1002/bse.1745

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (Fourth ed.). SAGE Publications.

Petti, L., Serreli, M., & Di Cesare, S. (2018). Systematic literature review in social life cycle assessment. *International Journal of Life Cycle Assessment*, *23*(3), 422–431. https://doi.org/10.1007/s11367-016-1135-4

Reichertz, J. (2009). Abduction: The logic of discovery of grounded theory. *Forum: Qualitative Social Research*, *11*(1). https://doi.org/10.17169/fqs-11.1.1412

Sala, S., Farioli, F., & Zamagni, A. (2013). Progress in sustainability science: Lessons learnt from current methodologies for sustainability assessment: Part 1. *International Journal of Life Cycle Assessment*, *18*(9), 1653–1672. https://doi.org/10.1007/s11367-012-0508-6

Schaltegger, S., & Burritt, R. (2014). Measuring and managing sustainability performance of supply chains: Review and sustainability supply chain management framework. *Supply Chain Management: An International Journal*, *19*(3), 232–241. https://doi.org/10.1108/SCM-02-2014-0061

Schaubroeck, T., & Rugani, B. (2017). A revision of what life cycle sustainability assessment should entail: Towards modeling the net impact on human well-being. *Journal of Industrial Ecology*, *21*(6), 1464–1477. https://doi.org/10.1111/jiec.12653

Seuring, S. (2004). Industrial ecology, life cycles, supply chains: Differences and interrelations. *Business Strategy and the Environment*, *13*(5), 306–319. https://doi.org/10.1002/bse.418

Seuring, S. (2008). Assessing the rigor of case study research in supply chain management. *Supply Chain Management: An International Journal*, *13*(2), 128–137. https://doi.org/10.1108/13598540810860967

Seuring, S., & Gold, S. (2012). Conducting content-analysis based literature reviews in supply chain management. *Supply Chain Management: An International Journal*, *17*(5), 544–555. https://doi.org/10.1108/13598541211258609

Seuring, S., Koplin, J., Behrens, T., & Schneidewind, U. (2003). Sustainability assessment in the german detergent industry: From stakeholder involvement to sustainability indicators. *Sustainable Development*, *11*(4), 199–212. https://doi.org/10.1002/sd.216

Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, *50*(1), 20–24. https://doi.org/10.5465/AMJ.2007.24160882

Silva, G. C., Regan, E. C., Pollard, E. H. B., & Addison, P. F. E. (2019). The evolution of corporate no net loss and net positive impact biodiversity commitments: Understanding appetite and addressing challenges. *Business Strategy and the Environment*, *28*(7), 1481–1495. https://doi.org/10.1002/bse.2379

Souza, R. G., Rosenhead, J., Salhofer, S. P., Valle, R., & Lins, M. (2015). Definition of sustainability impact categories based on stakeholder perspectives. *Journal of Cleaner Production*, *105*, 41–51. https://doi.org/10.1016/j.jclepro.2014.09.051

Sparks, J., & Ledgerwood, A. (2017). When good is stickier than bad: Understanding gain/loss asymmetries in sequential framing effects. *Journal of Experimental Psychology. General*, *146*(8), 1086–1105. https://doi.org/10.1037/xge0000311

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., … Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223), 1259855. https://doi.org/10.1126/science.1259855

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Sage.

Stubbs, W., & Cocklin, C. (2008). Conceptualizing a "sustainability business model". *Organization & Environment*, *21*(2), 103–127. https://doi.org/10.1177/1086026608318042

Tarne, P., Traverso, M., & Finkbeiner, M. (2017). Review of life cycle sustainability assessment and potential for its adoption at an automotive company. *Sustainability*, *9*(4), 670. https://doi.org/10.3390/su9040670

Thøgersen, J. (2006). Media attention and the market for 'green' consumer products. *Business Strategy and the Environment*, *15*(3), 145–156. https://doi.org/10.1002/bse.521

Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, *30*(3), 167–186. https://doi.org/10.1177/0735275112457914

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science (New York, N.Y.)*, *211*(4481), 453–458. https://doi.org/10.1126/science.7455683

Van de Velde, L., Verbeke, W., Popp, M., & van Huylenbroeck, G. (2010). The importance of message framing for providing information about sustainability and environmental aspects of energy. *Energy Policy*, *38*(10), 5541–5549. https://doi.org/10.1016/j.enpol.2010.04.053

Van Maanen, J., Sørensen, J. B., & Mitchell, T. R. (2007). The interplay between theory and method. *Academy of Management Review*, *32*(4), 1145–1154. https://doi.org/10.5465/AMR.2007.26586080

Wackernagel, M., & Rees, W. E. (1998). *Our ecological footprint: Reducing human impact on the earth. The new catalyst bioregional series* (Vol. 9). New Society Publ.

Wittneben, B. B. F., Okereke, C., Banerjee, S. B., & Levy, D. L. (2012). Climate change and the emergence of new organizational landscapes. *Organization Studies*, *33*(11), 1431–1450. https://doi.org/10.1177/0170840612464612

Wright, C., Nyberg, D., & Grant, D. (2012). "Hippies on the third floor": Climate change, narrative identity and the Micro-politics of corporate environmentalism. *Organization Studies*, *33*(11), 1451–1475. https://doi.org/10.1177/0170840612463316

Yin, R. K. (2018). *Case study research and applications: Design and methods* (Sixth ed.). Sage.

Zufall, J., Norris, S., Schaltegger, S., Revellio, F., & Hansen, E. G. (2020). Business model patterns of sustainability pioneers—Analyzing cases across the smartphone life cycle. *Journal of Cleaner Production*, *244*, 118651. https://doi.org/10.1016/j.jclepro.2019.118651

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APPENDIX A

TABLE A1 Examples of the dominant negative frame of sustainability performance

Illustrative quotations	Product life cycle stage
"It is positive that we sell ingredients to the customer [manufacturer] that are not environmentally harmful, but renewable." (I03)	First-tier supplier
"We have had good experiences when tailoring our IT systems [for product-related information exchanges] with the early establishment of a joint team [between the supplier and manufacturer] that aimed at avoiding delays in supply. We perceived it as very positive, that you establish a team that supports this bridging period if it is predictable that things will be adapted. Both firms did not want to risk that tailoring the IT systems would result in delayed supply and loss of production." (I01)	
"The production of liquid detergents, compared to powder-based detergents, is less energy intensive." (I10)	Manufacturing
"For every work activity, there is a so-called work activity analysis. This means that every step is analyzed to detect potential hazards, determine preventive measures, and provide protective equipment." (I06)	
"In our modern [warehouse] …, we significantly improved the quality of the working environment in terms of daylight, noise, temperature, ventilation, and other important aspects. When constructing new buildings it is very important that we consider and certify such sustainability aspects. The warehouse is certified with the silver standard." (I13)	Transportation and logistics
"We pay close attention in terms of how our logistics service partners deal with [their employees]. Partially, the logistics sector does not have the best reputation. Especially in some countries, the logistics sector has the bad reputation of cheap labor. … Of course, we are interested in an economic approach. However, we are always interested in a long-term relationship with our service providers. And such a long term-term relationship involves that the service provider complies with our requirements and values in terms of social aspects." (I13)	
"Many customers do not know that water hardness plays a role [in terms of dosage]." (I18)	Wholesale and retail stage
"The washing performance improved … at low temperatures. Today, the washing performance at 20 degrees [Celsius] corresponds to the washing performance at 60 degrees in the past" (I17), but "the customers do not believe that." (I16)	
"Recently, [the manufacturer] has reduced the number of wash-loads [per packaging unit] two times. I mean, from 18 to 16 washloads, and then from 16 to 15 washloads. The customers notice that. The price is the same, but it contains less detergent. Then, the customers complain." (I16)	
"It is astonishing, that you can get [so many clothes] clean at low temperatures." (I20)	Use stage
"People with an already existing allergies or skin irritations should be careful. … There was a time when I could not tolerate general powdered detergents. When breathing them in, I got asthma. … Then, I needed detergents without fragrance substances, but they were very hard to find. So, I went to certain vendors of biologically and organic products that offered a modular product system. Basically, you had a [mixture] consisting of surfactants, water … bleaching substances for white clothing, and fragrance substances, if you can tolerate them." (I21)	
"The share of recyclable and non-hazardous waste is very high in laundry detergent manufacturing. We are talking about packaging materials, paper, cardboard, foils, and PET [polyethylene terephthalate]. They get recycled. In the past, they were disposed of as a mixture, and combusted in the waste incineration plant. Today, however … the waste is sorted on the spot and brought to recycling." (I23)	Disposal stage
"We control the wastewater of industrial operations that pipe their wastewater into the sewer system, the wastewater treatment facility, and the [river]. Therefore, there is the necessity to cooperate [with the manufacturer]. … Laundry detergents are common ingredients of the municipal wastewater. In our specific context, we sometimes have higher concentrations [of laundry detergents and their ingredients such as surfactants] because of the [nearby] production processes, and especially because of the general reduction of industrial and domestic wastewater. … The amount of water decreases, therefore, the concentration increases. … We made an agreement with the detergent manufacturer in terms of not exceeding a maximum amount of wastewater at certain times of the day when we have low levels of wastewater in general. [High concentrations of surfactants in the wastewater] have the effect of foam formation. … The foam formation can cause degreasing of components in the facility. Thus, the components become damaged and corroded. … Furthermore, the foam compromises our equipment that measures the level of wastewater as well as [maintenance] activities in the sewer system." (I27)	

TABLE A2 Overview of illustrative quotations showing why interviewees struggle to identify positive impacts

Illustrative quotations	Reasons for dominance of negative framing
Interviewer: "What criteria would you use to determine the societal benefits of laundry detergents?" "We cannot evaluate that. It will be difficult for me to really evaluate how society sees this." (IP-08). "You are asking weird questions." (IP-09) "What a bizarre question! Consumers do not care about that at all. For them, only clean and good smelling laundry plays a role!" (IP-17) "Hm, I really have to think about that—what is positive?" (IP-18) "That's difficult." (IP-24) "Um, well positive, well actually, day-to-day operations are running well." (IP-25) "I find the topic a bit difficult. It is something I do not think about every day." (IP-26) "That's a tough question." (IP-27)	Talking about positive impacts is a new and strange situation for the interviewees.
"One must certainly consider the ecological contribution through the further development of detergents. That means less surfactants or less chemicals in the formulation of detergents. That means less energy input required by the washing machine." (I02)	Interviewees mistake positive impacts with the reduction and avoidance of negative impacts (especially, when reflecting ecological impacts).
Interviewer: "Was there a situation in the detergent context that stuck in your mind in a particularly positive way?" "That's the bad thing. In general, the negative memories stick in your mind more than the positive ones." (IP-16) Interviewer: "So in contrast, is there anything that stuck in your mind as particularly positive?" "No, actually, not. Not that I know something like that." (IP-22)	Interviewees have a lingering ("sticky") perception of negative frames.
"Often, one has the impression that there are only problems. However, the problems we are discussing are about 20% of the whole, and 80% of it is good. After all, people have a secure job here, many social benefits, and a company pension in addition to the statutory pension—many benefits that are sometimes overlooked." (I11–12)	Interviewees have an asymmetric/overproportioned perception of negative frames.
Interviewer: "Are there any positive aspects that would improve laundry detergents?" "There is one point that can be improved from an ecological perspective. Sometimes, there is marketing nonsense. We consume resources because we put dyed powder sprinkles into the product, and we operate plants that consume energy to produce these sprinkles—just so that marketing can tell the customer, 'Look, there are red sprinkles in the product; this is good for washing colored clothes.' For a normal detergent, there are blue sprinkles in it [to signal] power through oxygen. Blue indicates oxygen and red indicates color. Therefore, we are not yet completely honest in terms of sustainability. Such aspects have been introduced to support marketing. Years ago, we produced all of our products without colored sprinkles. This makes both the production process and life 100% easier….However, the effect on the customer is valued very highly, which is why we put these sprinkles in. Ultimately, I am just the manufacturer, and I was told, 'We need a powder with blue sprinkles in it.' However, from an ecological viewpoint and from a consumer's [washing performance] viewpoint, this makes no sense." (I07)	People struggle to identify positive impacts of laundry detergents because they know examples where marketing decisions are weighted higher than sustainability decisions (trade-off between conventional marketing and sustainability).