

## RESEARCH ARTICLE



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# What makes businesses commit to nature conservation?

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## Abstract

To halt the loss of biodiversity and ecosystem services, various actors including companies need to engage, but it is not yet clear what drives voluntary business commitments. We explore leverage points that might increase corporate action for conservation. We apply a structural equation model based on the theory of planned behaviour to analyse data from 618 German companies, collected through an online-survey in 2019. We show that a favourable attitude, driven by perceived business relevance and benefit prospects, fosters engagement. Perceived difficulties, such as lacking finances and knowledge, hinder the engagement. Customers, employees and the general public are presently the only stakeholder groups that drive corporate conservation engagement. Nevertheless, the expectation levels of virtually all stakeholders were found to be quite low and as such inadequate for the ecological crisis we face. We discuss how political will and goal setting can encourage more widespread business support for the natural environment.

## KEYWORDS

biodiversity, corporate responsibility, ecosystem services, structural equation modelling, sustainable development, theory of planned behaviour

## 1 | INTRODUCTION

Companies' actions play a crucial role in the quest for sustainable development, not just because of their social and environmental impacts but also because of their transformative and financial power. Half of the CEOs of the world's largest companies consider business as the single most important actor in achieving the Sustainable Development Goals (Gupta, Raghunath, Gula, Rheinbay, & Hart, 2019). While climate change has been a comparatively prominent topic for some time, issues around biodiversity protection and nature conservation are starting to gain attention from the global business community as well. Initiatives and approaches to assess, value and report about biodiversity and natural capital have undergone rapid developments in recent years. The Natural Capital Protocol, the Aligning Biodiversity Measures for Business initiative, the ENCORE tool or the Integrated Biodiversity Assessment Tool are a few examples. By mid-2020, nearly 400 companies worldwide have joined the 2019 internationally

established Business for Nature coalition, in which they publicly commit to stop the loss of nature.

Despite these developments and existing examples of corporate biodiversity engagement, we are still on the fast track to losing biodiversity due to, among others, a significant lack of available funding and wider business support (Barbier, Burgess, & Dean, 2018; Smith et al., 2019). To underline this deficit, about half of the largest 100 corporations worldwide were found to mention biodiversity in their reports and about a third had clear biodiversity commitments, but only five presented specific, measurable and time bound goals (Addison, Bull, & Milner-Gulland, 2018). Another study revealed that from 33 companies that published no net loss or net positive biodiversity commitments since 2001, fifteen retracted their commitments or failed to provide updated information by 2016 (de Silva, Regan, Pollard, & Addison, 2019). Biodiversity and natural capital oriented business strategies have not been mainstreamed, leaving a limited group of intrinsically motivated companies committed to nature

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conservation (van Oorschot, Kok, & van Tulder, 2020). Business risk surveys, like the Allianz Risk Barometer or the Risks for Doing Business report of the World Economic Forum, either do not include the loss of biodiversity and ecosystems at all or rank it comparatively low. Thus, it appears that nature conservation is not yet a strategic concern to many companies. A main reason for this is that biodiversity is often, especially for firms of secondary and tertiary sectors, a public good. As long as ecosystems or other natural capital are not owned as productive asset, the degradation of the natural environment is more of a systemic than an individual risk for a firms' core operation—especially for downstream sectors. Nevertheless, as Macellari, Gusmerotti, Frey, and Testa (2018) pointed out, also sectors with indirect interrelations with nature, such as finance, health care and retail, can be noticeably affected by environmental degradation, for instance, because of higher procurement costs, regulatory and reputational risks, higher insurance claims or health problems of employees and consumers. Given the severity and urgency of our global ecological crisis as a macrosocial challenge, it is important to better understand what drives companies' engagement for nature conservation in order to identify leverage points that might spur business commitments for public environmental goods.

We conceptualise 'engagement for nature conservation' as targeted contributions to the protection and sustainable use of biodiversity and ecosystems as well as their benefits to individuals, economies and societies, often referred to as 'ecosystem services' (Costanza et al., 2017). We focus on voluntary contributions that directly aim at protecting biodiversity and ecosystem services. Generally, the ways in which companies are able to engage are diverse and influenced by their position in the value chain: Whereas primary sector companies, such as forestry and mining, have numerous best practices for biodiversity (Boiral & Heras-Saizarbitoria, 2017), engagement options for downstream sectors might be less obvious. Seymour (2020) described that many companies focus on international tree planting initiatives as part of their corporate climate strategies. Other examples of conservation activities in secondary and tertiary sectors include, for instance, the implementation of own conservation projects (e.g., biodiversity-friendly supply chain strategies and own tree planting events), partnerships with and/or donations to environmental nongovernmental organizations (NGOs) (financial or in-kind), corporate volunteering (e.g., pro-bono and participation in landscape care activities), the design of nature-friendly company premises (e.g., greening of buildings and flower strips on premises), environmental education (e.g., of employees or local community groups), conservation investments (e.g., payments for ecosystem services and habitat restoration investments) or taking a public stand for nature conservation issues (e.g., public relations and involvement in politics).

So far, the scientific literature provides limited empirical research about business commitments for nature conservation in particular. Related studies investigated, for instance, business perceptions towards the ecosystem services concept, for example, D'Amato, Wan, Li, Rekola, and Toppinen (2018) and Watson and Newton (2018); company involvement in payments for ecosystem services, for example, Davies et al. (2018) and Thompson (2018a); and biodiversity-related

reporting practices, for example, Addison et al. (2018), Hassan, Roberts, and Atkins (2020), Potdar, Gautam, Singh, Unnikrishnan, and Naik (2016), and Smith, Paavola, and Holmes (2018). Given the still nascent body of biodiversity-related business literature, no study—to the best of the authors' knowledge—has investigated the drivers of corporate conservation commitments by means of quantitative data. Some previous research assessed factors influencing environmental management, which typically refers to business operations, such as waste reduction or green technology, for example, Eiadat and Fernández Castro (2018), Ervin, Wu, Khanna, Jones, and Wirkkala (2013), González-Benito and González-Benito (2006), and Muduli et al. (2020). Generally, these papers highlight the importance of managers' personal pro-environmental motivations, stakeholder pressures and regulation. In how far such aspects encourage business commitments for public environmental goods such as nature conservation is not yet clear.

A recent qualitative study identified factors that influence the willingness of German companies to support environmental protection through buying conservation credits (Krause & Matzdorf, 2019). Communication and image gains were important benefit expectations from such an engagement, whereas the fear of greenwashing accusations appeared to be a relevant barrier (ibid.). Torelli, Balluchi, and Lazzini (2019) explained that stakeholder scepticism towards corporate environmental communication can lead to a reduced social legitimacy of a company or product with subsequent reductions in stakeholder purchase, investment or employment intentions. In line with environmental management studies, for example, Boiral, Talbot, and Paillé (2015) and Papagiannakis and Lioukas (2018), Krause and Matzdorf (2019) echoed the importance of a manager's personal motivation to protect nature. However, while the environmental management literature stressed the role of stakeholder pressures, for example, He, Xu, Shen, Wang, and Li (2019), Murillo-Luna, Garcés-Ayerbe, and Rivera-Torres (2008), companies may still engage in nature conservation despite currently low stakeholder expectations for such commitments (Krause & Matzdorf, 2019). Therefore, more research is needed to further investigate how companies perceive stakeholder expectations for nature protection and whether they influence business commitments in this field. To date, it is also uncertain whether only a few pioneering companies are starting to walk the talk or whether the wider business community, including smaller companies, have begun to put nature conservation on their action agendas. Hence, investigating the potential impacts of company characteristics, for example, size, ownership and sector, on the willingness to support nature conservation, might reveal whether there are types of companies that appear to be more active in safeguarding nature. For instance, it is conceivable that the support is influenced by sectoral differences regarding the affectedness from biodiversity loss (F&C Asset Management, 2004).

We address these research gaps on factors influencing voluntary business commitments for nature conservation based on a Germany-wide survey that was conducted with companies of secondary and tertiary sectors in 2019. The data covers a broad and diverse business landscape, including a wide range of business sectors, private and public companies as well as companies with various legal forms and ownership types. This allows insights into how the business

community at large perceives nature conservation issues. Using the theory of planned behaviour (TPB), we investigate the survey data through structural equation modelling. Thus, we add to the existing literature in two distinct ways: (1) whereas most studies investigated drivers for corporate environmental management in general, our paper has a focus on nature conservation and biodiversity. (2) While previous studies typically focused on businesses that reported about their activities or sectors with high environmental impacts, we capture a more diverse business landscape.

In short, this paper sets out to explore the following research questions:

1. What characterises companies that are voluntarily engaged for nature conservation?
2. Which factors influence their commitments to protect nature?

## 2 | THEORETICAL MODEL AND HYPOTHESES

Our model to analyse these research questions is based on the theory of planned behaviour (TPB), developed by Ajzen (1991). The TPB is a widely applied psychological theory to analyse environmental behaviour (Si et al., 2019) and has a high explanatory power in this context (Kaiser, Hübner, & Bogner, 2005). Even though the TPB has initially been developed to analyse and predict individuals' behaviour, psychological theories may well be used to analyse organisational behaviour (Staw, 1991). This, for instance, applies when individuals are able to influence organisational actions (ibid.), which is notably the case when managers decide about the environmental activities of their firms. The TPB has already been used to analyse organisational behaviour in an environmental context (Carrillo-Higueras, Prajogo, & Smith, 2018; Koellner, Sell, & Navarro, 2010; Papagiannakis & Lioukas, 2012).

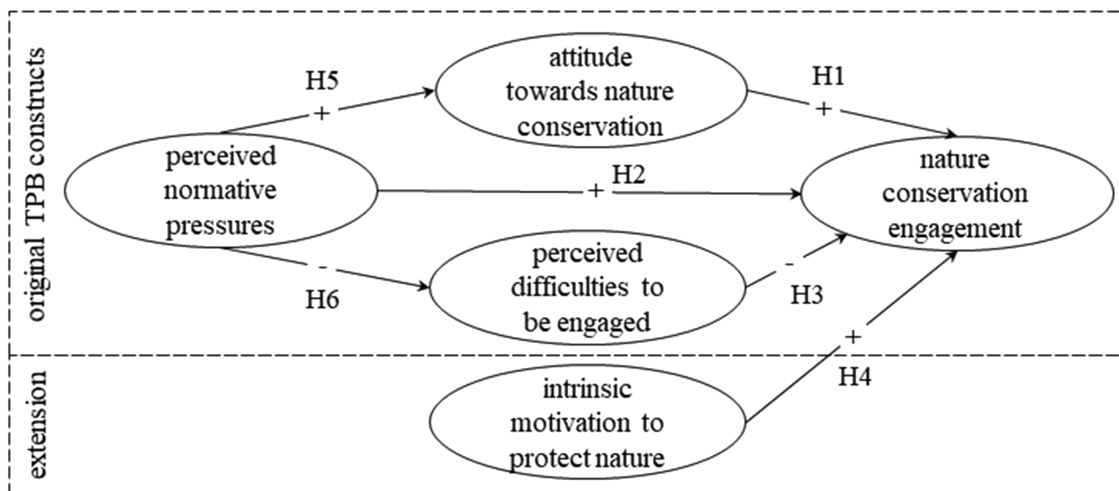
The original TPB stipulates three conceptually independent antecedents of behavioural intention, namely, *attitude*, *subjective norm* and

*perceived behavioural control* (PBC)—these are all explained in the subsections below. Following from that, actual behaviour is a function of intention as well as PBC (Ajzen, 1991). From the outset, Ajzen explicitly permitted context-specific extensions of the original TPB model, which has commonly been done in environmental behaviour studies that applied the TPB (Si et al., 2019). Moreover, background factors, such as demographics or other types of characteristics, may influence behaviour indirectly through attitude, subjective norm or PBC. Even though such background factors are not part of the actual TPB model, they may complement it and expand the understanding about a specific behaviour. In the following, we describe how we adapted the TPB to our study context and subsequently present six hypotheses as well as the control variables we used.

Figure 1 shows our adaptation of the TPB, in which *attitude towards nature conservation*, *perceived normative pressures* (relates to 'subjective norm') and *perceived difficulties to be engaged* (relates to 'PBC') are direct antecedents of the actual behaviour in question, namely, the voluntary *nature conservation engagement* of companies. Furthermore, we conceptualised the perceived normative pressure as a factor that influences both the attitude towards nature conservation and the perceived difficulties to be engaged. Perceived pressures therefore have one direct and two indirect pathways to influence the nature conservation engagement of companies. In addition to these core TPB concepts, we extended our model with *intrinsic motivation to protect nature*. Unlike the original TPB, our model does not include behavioural intention as an interposed construct between its antecedents and actual behaviour. Instead our model and observations measure actual behaviour and its predictors, an approach already applied in similar studies (Boiral et al., 2015; Moser, 2015; Papagiannakis & Lioukas, 2012).

### 2.1 | Attitude towards nature conservation

The attitude towards a behaviour is formed through an assessment of positive and negative outcome expectations, which results in a



**FIGURE 1** Theoretical model based on the theory of planned behaviour (Ajzen, 1991). Arrows indicate causal relationships. '+' stands for positive relationships, '-' for negative relationships

favourable or unfavourable attitude towards that behaviour (Ajzen, 1991). Thus, the attitude reflects a preference on whether or not to perform a behaviour (*ibid.*). In our context, a manager's attitude towards the voluntary protection of biodiversity and ecosystems depends on reflections about the utility for the company itself. Generally, the higher the benefit expectations for the company, the more likely are activities for nature conservation. Companies typically expect communication and image gains from a voluntary nature conservation engagement, whereas other benefit expectations, for example, business risk reduction, cost reduction or innovation, are not commonly perceived (Krause & Matzdorf, 2019; Smith et al., 2018; Thompson, 2018b). Benefit expectations seemingly differ, though, depending on the specific type of engagement: Gattás, De Campos, Barakat, and Orsato (2019) investigated reasons for voluntary ecosystem services valuation and found that access to knowledge and risk mitigation were strong motivations, whereas reputational gains and innovation were weak motivations. In contrast to benefits, firms could also experience disadvantages from an engagement for nature conservation. They might be accused of greenwashing (Torelli et al., 2019) or criticised for supporting conservation goals that are controversially discussed in society and politics (Krause & Matzdorf, 2019).

**H1** The more favourable the attitude towards nature conservation, the more likely a company's voluntary nature conservation engagement.

## 2.2 | Perceived normative pressures

Ajzen's category of subjective norms reflects the perception about social pressures to perform or not to perform any given behaviour. In other words, it is about the extent to which important others approve or disprove of a behaviour (Ajzen, 1991). In a business context, subjective norms relate to perceived expectations from stakeholders, such as customers, employees, suppliers or the general public. Stakeholder influences on the environmental behaviour of companies have already been the focus of much research. It has been found, for example, that companies' environmental commitments depend on manager perceptions about the importance of stakeholders: Henriques and Sadorsky (1999) revealed that managers of environmentally proactive firms perceived all stakeholders except the media as important, whereas firms with reactive strategies perceived no stakeholders important except the media. Murillo-Luna et al. (2008) showed that if managers perceived pressures from one stakeholder group, they typically perceive pressures from other stakeholders as well. While many studies underline the importance of stakeholder expectations for environmental management, for example, Delmas and Toffel (2004) and He et al. (2019), some argue that stakeholder pressures are not relevant for companies' environmental management and nature conservation activities (Carrillo-Higueras et al., 2018; Krause & Matzdorf, 2019). While noting a certain level of ambiguity about the role of stakeholder pressures for nature conservation in particular, we hypothesise

a direct, positive and significant relationship in accordance with the TPB.

**H2** The stronger the perceived normative pressures to be engaged for nature conservation, the more likely a company's voluntary nature conservation engagement.

## 2.3 | Perceived difficulties to be engaged

Related to Ajzen's PBC, this construct is all about the perceived ease or difficulty to behave a certain way, taking into account the required skills, resources and opportunities to perform the behaviour. Thus, the PBC expresses whether or not a person perceives themselves to have behavioural control (Ajzen, 1991). Generally speaking, the higher the perceived ease, the higher the behavioural intention. Studies in the context of pro-environmental business activities already found significant relationships between PBC and behaviour (Boiral et al., 2015; Carrillo-Higueras et al., 2018; Papagiannakis & Lioukas, 2012). Several constraints may impede a voluntary business engagement for nature conservation, such as lack of time and money and lack of knowledge about how to support nature conservation, as well as challenges to justify voluntary expenses within the company (Krause & Matzdorf, 2019). Similarly Thompson (2018a), who analysed barriers for corporate-financed payments for ecosystem services in Southeast Asia, revealed limiting factors, such as a lack of knowledge about ecosystem services, a limited openness towards new types of environmental stewardship and reluctance to pay for the monitoring of project results.

**H3** The stronger the perceived difficulties to be engaged, the less likely a company's voluntary nature conservation engagement.

## 2.4 | Intrinsic motivation to protect nature

Like many other environmental science researchers, we add an additional construct to our TPB model, called 'intrinsic motivation to protect nature'. In environmental research, most commonly ethics-related factors have been added to the TPB, such as environmental concern and knowledge, environmental values, self-identity or moral norms (Si et al., 2019). This is not surprising as the TPB has been criticised for a lack of moral-related constructs, that is, elements of personal morality or responsibility, which are naturally important when investigating an ethical type of behaviour (Kaiser et al., 2005; Lopez-Mosquera, Garcia, & Barrena, 2014). The studies by Boiral et al. (2015) and Papagiannakis and Lioukas (2018), for instance, showed the importance of managers' personal attitudes and values for the initiatives of pro-environmental companies. Based on the norm-activation theory, Papagiannakis and Lioukas (2018) conceptualised environmental personal norms through (1) an awareness of consequences from environmental problems and (2) a sense of personal responsibility to prevent those. They found that especially personal norms of



charismatic CEOs drive corporate environmental proactivity (ibid.). We therefore included the intrinsic motivation of managers into our model, which is conceptionally different from the attitude construct, as described above. The latter is formed through a utility assessment for the organisation, whereas intrinsic motivation reflects the personal environmental values of managers. In our model, we stipulate a positive and significant effect of a manager's intrinsic motivation on the conservation behaviour of the company.

- H4** The higher a manager's intrinsic motivation to protect nature, the more likely a company's voluntary nature conservation engagement.

## 2.5 | Mediators

In addition to the direct antecedents, we also hypothesise a mediating effect of attitudes on the relationship between perceived normative pressures and nature conservation behaviour. The reason for this is that we posit a causal link between the level of stakeholder expectations and the potential benefits, which a company might receive from its commitments to nature conservation. For instance, as noted above, an improved reputation has been argued to be the most common benefit expectation from a voluntary nature conservation engagement (Krause & Matzdorf, 2019). However, the extent of such benefits naturally depends on whether stakeholders, such as consumers or employees, are thought to care about nature or not. Moreover, we hypothesise a second mediating effect: we stipulate that the influence of perceived normative pressures on the conservation behaviour is mediated by a company's perceived ability to be engaged. We presume that high stakeholder pressures might reduce some company-internal barriers that might otherwise hinder an engagement. Similarly, a study that investigated people's willingness to pay for the conservation of an urban park included these mediating effects between subjective norms and attitude as well as subjective norms and PBC, which were both found to be significant (Lopez-Mosquera et al., 2014).

- H5** The stronger the perceived normative pressures to be engaged in nature conservation, the more favourable a company's attitude towards nature conservation.
- H6** The stronger the perceived normative pressures to be engaged in nature conservation, the lower a company's perceived difficulties to be engaged in nature conservation.

## 2.6 | Control variables

Our extended model comprises several control variables: (1) the customer type, including business or private customers (*customer markets*): We include this control because image gains are an important reason for businesses to get involved in conservation, for example,

Thompson (2018a). Thus, it might be that especially companies with end customers depend on their good reputation and are active for conservation; (2) the number of employees (*company size*): A company's resources and capacities tends to increase with size. It is perceivable that this makes conservation initiatives of larger companies more likely; (3) the position of the survey participant (*respondent*): This controls for a potential model bias, dependent on the information provider, such as executives, marketing or environmental managers; (4) the business sector (*sector*): Because companies are affected by environmental degradation to various extents (F&C Asset Management, 2004), environmentally sensitive companies might be more active for nature protection; and (5) the company's ownership type, for example, owner-managed or stock listed (*company characteristics*): It could be assumed that owner-managed companies are more likely committed to nature conservation, for instance, due to the personal values of executives (Maggioni & Santangelo, 2017). Table S3 provides an overview of our control variables.

## 3 | MATERIALS AND METHODS

### 3.1 | Sampling and data collection

We conducted a Germany-wide company survey in 2019 including businesses of secondary and tertiary sectors. We excluded the primary sector because the survey aimed to specifically reveal information about voluntary conservation commitments. Due to their landscape activities, conservation concerns are inherent to good operational practices of primary companies and, hence, not the focus of our analysis. The target population of our survey included medium and large sized German companies and ranged from private and public companies as well as diverse sectors. In total, our target population comprised nearly 79,000 companies. The survey was implemented with the help of a service agency in order to gain access to a large number of suitable company addresses. The agency had around 68,000 addresses available that matched our specifications. From this sample frame, we conducted proportional stratified random sampling to reflect the German business landscape. The stratification criteria were (1) geographical location based on all of the 16 German federal states and (2) company size based on the number of employees (cf. Table S1). We sampled a large number of 17,000 companies, to ensure that sound statistical analyses would be possible despite an anticipated low response rate. Of those, we successfully reached 16,447 companies. For full methodological information, information about the target population and access to the data please refer to <https://www.doi.org/10.4228/ZALF.DK.149>.

The data was collected through a self-administered online questionnaire, also available from the above mentioned repository. The questionnaire gathered information about the company itself as well as perceptions about voluntary business commitments to nature conservation. We invited our sampled contacts through postal invitation letters, which personally addressed executive managers, heads of marketing and communication or other

members of the first management level. All invitation letters stated a short URL link as well as a personalised participation code. The survey required an estimated 15 to 20 min to complete. It was realised as an online system optimised for various web browsers and mobile devices.

A total of 747 participants (4.54%) logged in to the online survey. Of those, we screened out questionnaires that did not provide answers to central questions needed for our analysis as well as those that either provided no answer or 'I don't know' about whether or not their company has been voluntarily engaged for nature conservation. Thus, our analysis is based on 618 questionnaires (3.76%). Table S3 provides insights into the characteristics of these companies, such as sector, ownership type, customer markets and number of employees. It shows that the majority of companies in our sample were medium-sized, owner-managed manufacturing firms with business customers. While company surveys often struggle with low response rates, especially when it is about organisational issues and addresses high-level managers (Anseel, Lievens, Schollaert, & Choragwicka, 2010; Mellahi & Harris, 2016), we saw further challenges in our specific case. First of all, participation is largely dependent on whether or not the research subject is of interest (Anseel et al., 2010). Presumably, as noted before, nature conservation might not yet be a topic of high interest to many companies. Second, no telephone or e-mail information was available and, therefore, no cost- and resource-effective way to send out reminders. In contrast, most other surveys include numerous follow-ups, which have been found to enhance response rates (Anseel et al., 2010). Lastly, our postal invitation letters were dispatched in cost-efficient franked envelopes. The lack of conventional stamp typically signifies direct mail so many recipients might have discarded the letter due to misconceiving them as advertisement.

## 3.2 | Data analysis

### 3.2.1 | Partial least square structural equation modelling

To analyse the causal relationships between the latent TPB constructs, we employed structural equation modelling (SEM), which allows analysing complex interrelationships between observed and latent variables, also called measures and constructs, respectively (Hair, Risher, Sarstedt, & Ringle, 2018). SEM is the most common instrument for the empirical testing of latent variables and their causal relationships (Weiber & Mülhhaus, 2014). Due to a mixed, formative and reflective specification of our measurement model (cf. Section 3.2.2) as well as non-normal data distribution, we employed partial least squares (PLS) estimation of our structural equation model. In SEM-PLS, constructs are computed as a weighted sum of its manifest variables. As the causal pathways from formatively defined measures (also called composite indicators) may leave variance in the construct unexplained, PLS procedures

specify error terms for the constructs. Measures are standardised with a mean of 0. PLS iteratively uses least square predictions for the measurement model constructs in (multiple) linear regressions of the structural model pathways between endogenous constructs such that prediction error terms for the constructs are reduced. As such, the PLS approach is a variance-based method because it maximises the explained variance of the dependent variables or constructs. The model converges when changes in outer weights of the measurements fall below a predefined threshold (in our case  $10^{-7}$ ). Causal pathway estimates are standardised and thus comparable. Total effects are the sum of direct and indirect effects along causal pathways. For significance levels, PLS relies on non-parametric bootstrapping. In our case, we used 10,000 bootstrap samples. During data analysis, we dealt with missing values through 'pairwise deletion', which allowed us to use of most of the available data while avoiding a potential imputation bias through replacing missing values with mean values. For the corresponding computations, we used SmartPLS 3 (Ringle, Wende, & Becker, 2015).

### 3.2.2 | Measurement model

Our measurements for *attitude*, *perceived normative pressures* and *perceived difficulties* were formative due to the nature of the questions. The questions measured perceptions of multiple aspects that jointly form the latent construct (cf. Table 1). For example, the scores for perceived pressures from multiple stakeholders formed the construct of perceived normative pressures. This formative conceptualisation represents a linear combination of independent, exogenous measures for the above-mentioned constructs. In contrast, intrinsic motivation was measured reflectively, as personal interest and a sense of responsibility can be understood as a representation of an underlying motivational disposition to protect nature. All observed variables in our measurement model were gathered on 5-point Likert scales, which included an 'I don't know' answer option.

### 3.2.3 | Quality criteria

For assessing the quality of the estimates, we followed Weiber and Mülhhaus (2014) and Hair et al. (2018). In particular, we assessed the variance inflation factor (VIF) to evaluate collinearity among the indicators of the formatively measured constructs. Additionally, a common quality criterion is the significance of the indicator weights for formative constructs and outer loadings for reflective constructs (Hair et al., 2018), tested through bootstrapping. Tables S2 and S4 list the bootstrapping results of our base and extended model, respectively. Based on that, we could infer which of the composite indicators exhibited significant correlations with the latent constructs. Each construct of our base model was measured by several significant indicators. The extended model included control variables (cf. Table S3), which allowed us to assess our second research question (cf. Section 4.2). In terms of model development, we tested several

**TABLE 1** Descriptive statistics and variance inflation factors of observed variables, organised by constructs

Construct and related items	Variable name	N	Mean (SD)	VIF
Attitude towards nature conservation				
Company benefits from a nature conservation engagement				
Image improvement	<i>image_gain</i>	597	3.12 (1.07)	1.940
Employee retention and motivation	<i>employee_motivation</i>	597	2.84 (0.99)	1.682
Protection of business-relevant resources	<i>resource_protection</i>	583	2.69 (1.13)	1.488
Nature conservation is not relevant to our business	<i>relevance</i>	604	3.25 (1.34) <sup>c</sup>	1.480
Other environmental topics are more important	<i>priority</i>	612	2.19 (1.11) <sup>c</sup>	1.260
Nature conservation issues are too complicated for our external communication	<i>easy_communic</i>	574	3.94 (1.06) <sup>c</sup>	1.318
We lack proof that conservation projects are effective	<i>effectiveness_belief</i>	548	3.85 (1.12) <sup>c</sup>	1.139
We could be criticised for nature conservation engagement	<i>no_criticism</i>	577	4.33 (0.93) <sup>c</sup>	1.135
Perceived normative pressures				
Expectations of corporate nature conservation				
Private and business customers	<i>customer_pressure</i>	534	2.45 (1.00)	2.236
Employees	<i>employees_pressure</i>	578	2.51 (0.94)	1.499
Financial institutions	<i>financier_pressure</i>	505	1.61 (0.80)	1.965
General public	<i>public_pressure</i>	539	2.78 (1.09)	2.680
Politics	<i>regulator_pressure</i>	518	2.61 (1.15)	2.166
Suppliers	<i>supplier_pressure</i>	544	1.84 (0.86)	2.025
Perceived difficulties to be engaged				
Difficulty to internally justify voluntary expenditures	<i>expense_justification</i>	569	2.65 (1.32)	1.578
Lack of knowledge how to be engaged	<i>lack_of_knowledge</i>	590	2.35 (1.11)	1.164
Lack of money to voluntarily pay for conservation	<i>lack_of_money</i>	576	2.98 (1.32)	1.639
Lack of time to take care of the voluntary engagement	<i>lack_of_time</i>	565	3.11 (1.26)	1.373
Authority of respondent to decide about engagement	<i>lack_of_invest_authority</i>	571	1.90 (0.72) <sup>a</sup>	1.004
Intrinsic motivation to protect nature				
Our nature conservation engagement depends on decision-makers' personal interest in nature	<i>personal_interest</i>	575	3.23 (1.24)	1.033
We have responsibility to contribute to nature conservation beyond legal obligations	<i>selfresponsibility</i>	564	3.12 (1.24)	1.033
Voluntary nature conservation engagement				
Voluntary company engagement for the protection of biological diversity and natural ecosystems	<i>engaged</i>	618	<sup>b</sup>	1.000

Note: N is the number of valid responses per variable, excluding missing or 'I don't know' answers. All observed variables were measured on a 5-point Likert scale, except the variable marked with superscript 'a', which was measured on a 3-point scale, and the variable marked with superscript 'b', which was measured in a binary way. In all 5-point Likert scales, 5 indicated the highest level of agreement, except variables marked with superscript 'c', which were reversely coded so that 1 indicated the highest level of agreement. Source: Authors' computation.

Abbreviations: SD = standard deviation; VIF = variance inflation factor.

sets of interconstruct pathways and kept the ones that made improvements in explanatory power, in terms of explained variances measured in (adjusted)  $R^2$ .

## 4 | RESULTS

In the following, we report the results of our measurement model and our base structural model (Section 4.1). Next, we comment on the extended structural equation model with the full set of control variables

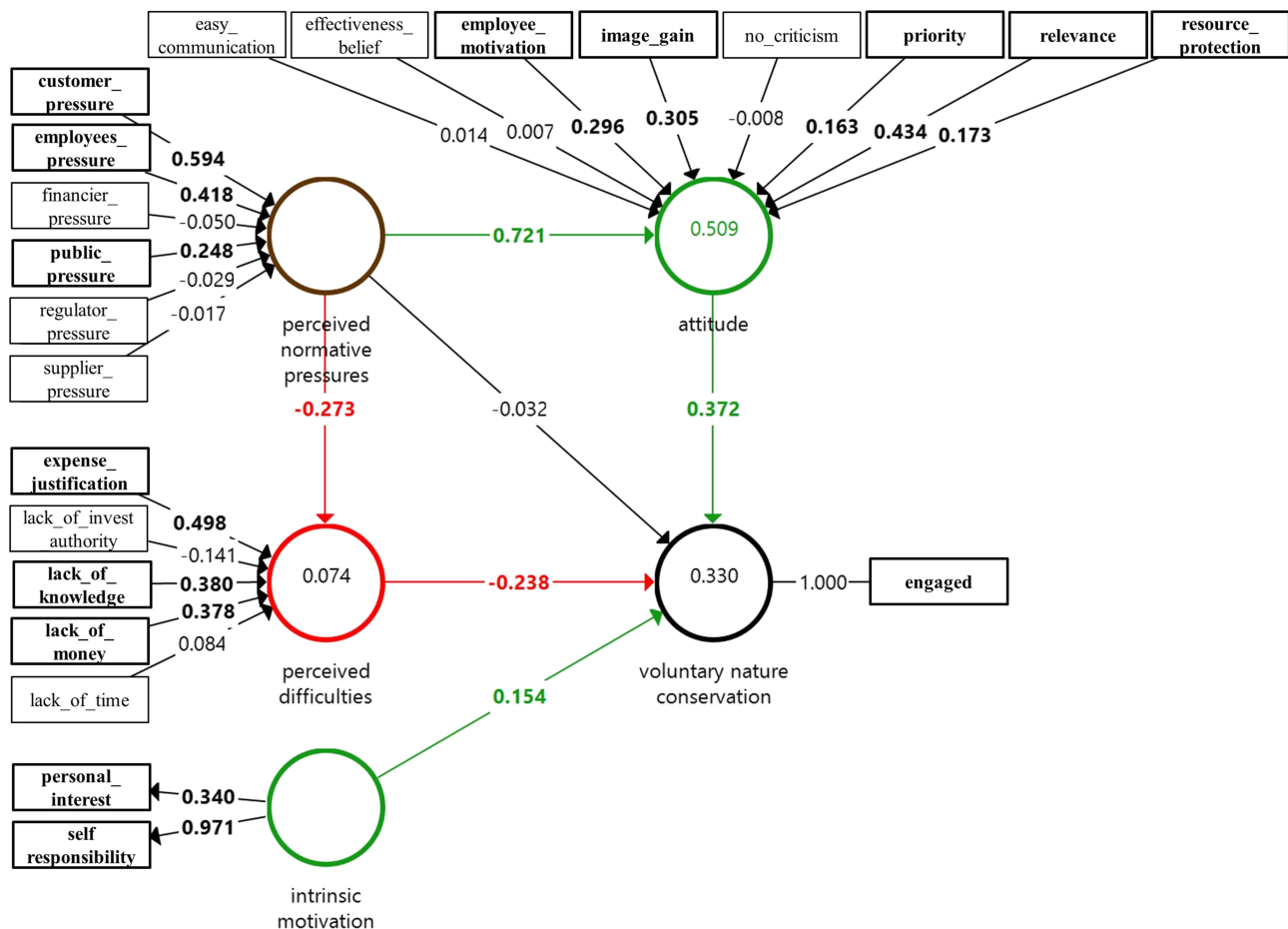
to identify characteristics of companies that stated voluntary nature conservation commitments (Section 4.2). Generally, from 618 companies in our analysis, 255 respondents (41.26%) stated voluntary conservation commitments of their companies, whereas 363 (58.74%) did not. This ratio between committed versus noncommitted is likely not representative for all German businesses in secondary and tertiary sectors, due to a potential self-selection bias to participate in the survey. What the ratio does show, however, is that our results are based on sufficiently large sample sizes for both cases, which allowed sound statistical analyses to answer our research questions.

#### 4.1 | Base structural equation model

Table 1 shows the measurement variables that formed or reflected the related latent constructs, including mean values, standard deviation and VIF. All VIF of formative measures were below the critical threshold of 3 (Hair et al., 2018), which indicates that there was no multicollinearity between observed variables. The construct *intrinsic motivation* has a composite reliability score of 0.653—which is acceptable for exploratory research (Hair et al., 2018), and a  $\rho_A$  of 0.995 (Dijkstra & Henseler, 2015). The construct furthermore has an average variance extracted of 0.537 and a heterotrait–monotrait ratio with voluntary nature conservation of 0.530. We can therefore assume that there are no problems with neither reliability nor convergent or discriminant validity of the construct.

Overall, our base structural equation model (cf. Figure 2) explained 33% of the observed variance in voluntary business conservation engagement (the adjusted  $R^2$  is 0.326). We found that the behaviour is mainly dependent on a favourable *attitude*, which had the strongest direct, positive and significant relationship with the actual engagement. *Perceived difficulties* had the second strongest direct, negative and significant relationship with an engagement.

*Intrinsic motivation* had a positive and significant influence, but its effect on behaviour was lower than both a favourable attitude towards nature conservation and the perceived ability to be engaged. *Perceived normative pressures* had no significant direct influence. However, perceived pressures had an indirect influence on the behaviour, as the mediation through attitude and perceived difficulties had clear and significant coefficients. Perceived pressures were strongly positively correlated with attitudes, explaining about 50% of the observed variance in the latent attitude construct. Perceived pressures were negatively and significantly correlated with perceived difficulties, accounting for around 7% of the observed variance. That is to say, the higher the perceived stakeholder pressures, the lower the perceived difficulties to be engaged as well as the higher a favourable attitude towards nature conservation. This resulted in a significant and positive total effect of perceived pressures on the business conservation behaviour (cf. Table 2). Following the mediation analysis procedure proposed by Cepeda Carrión, Nitzl, and Roldán (2017), we can see that for *perceived normative pressures*, (i) the indirect effects are significant and (ii) the direct effect is not significant. Therefore, *attitude* and *perceived difficulties* can be considered full mediators of *perceived normative pressures*.



**FIGURE 2** The estimated structural equation model with path coefficients. Bold font indicates significance level of 10%. Red symbolises negative, green symbolises positive relationships between constructs. The  $R^2$  in the circled constructs expresses how much variance is explained by the constructs with arrows aiming at it. Measurement variables (in boxes) are described in Table 1. Source: Authors' computation [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

**TABLE 2** Bootstrapped SEM-PLS results

	Original sample	Bootstrap mean	SD	T statistics	90% CI	P values
H1: attitude → voluntary nature conservation	0.372	0.377	0.071	5.208	(0.260, 0.494)	<b>0.000</b>
H2: perceived normative pressures → voluntary nature conservation ( <i>direct</i> )	−0.032	−0.032	0.072	0.441	(−0.154, 0.084)	0.660
H3: perceived difficulties → voluntary nature conservation	−0.238	−0.240	0.042	5.690	(−0.369, −0.192)	<b>0.000</b>
H4: intrinsic motivation → voluntary nature conservation	0.154	0.152	0.047	3.281	(0.075, 0.229)	<b>0.001</b>
H5: perceived normative pressures → attitude	0.721	0.724	0.038	19.166	(0.661, 0.784)	<b>0.000</b>
perceived normative pressures → attitude → voluntary nature conservation ( <i>indirect</i> )	0.268	0.273	0.056	4.791	(0.180, 0.361)	<b>0.000</b>
H6: perceived normative pressures → perceived difficulties	−0.273	−0.283	0.054	5.049	(−0.369, −0.192)	<b>0.000</b>
perceived normative pressures → perceived difficulties → voluntary nature conservation ( <i>indirect</i> )	0.065	0.068	0.017	3.804	(0.039, 0.094)	<b>0.000</b>
perceived normative pressures → voluntary nature conservation ( <i>total indirect</i> )	0.301	0.308	0.048	6.279	(0.239, 0.424)	<b>0.000</b>

Note: P values in bold indicate significant measurement variables of their corresponding construct at a 10% level. SD stands for standard deviation, CI for confidence interval. For the indirect effects, bias corrected CI are given. Path coefficients and (where appropriate) total effects, summing direct and indirect effects for each of the hypotheses. Source: authors' computation.

Furthermore, we specified two mediators for one construct, making it a multiple mediator model with full mediation effects in both directions (see Figure 2 and Table 2).

Figure 2 also shows which measurement variables were significant on a 10% level to form or reflect their associated latent constructs. In the case of *attitude*, we found that especially the perceived connection between a business and its natural environment, that is, relevance, shaped a favourable attitude towards nature conservation. In terms of effect size, this was followed by image gain, employee retention and motivation, resource protection and lastly, priority, which refers to the perception that nature conservation issues are equally as important as other environmental challenges. In other words, companies particularly support nature conservation if they expect to gain benefits from it, most notably image improvements, employee retention and motivation, as well as the protection of natural input resources. They also need to perceive nature conservation as a relevant topic for their business. Regarding *perceived difficulties*, justifying voluntary expenses, a lack of knowledge on how to be engaged for nature conservation as well as a lack of available funds had significant outer weights. This means, for instance, the higher the challenge to justify voluntary expenses to colleagues, the higher the perceived difficulties and, thus, the less likely an engagement. For the *intrinsic motivation*, both the perception about personal interests of decision makers in nature as well as a sense of societal responsibility for more than legally required action had positive, significant outer loadings. Regarding *perceived normative pressures*, the expectations from customers and employees and public pressure had significant outer weights and therefore drive business activities for nature protection. Notably, financial institutions as well as the government were not identified as stakeholder groups whose expectations

made companies engage in nature conservation. We will return to how expectations differ from supporting actions in Section 5. In general, all stakeholder groups were ranked to have only medium or low levels of expectations; compare Table 1. The table shows that on a 5-point Likert scale, all groups were on average rated below 3, with pressures from the general public achieving the largest mean of 2.78 (SD 1.09) and financial institutions the lowest mean with 1.61 (SD 0.80).

Table 2 summarises the direct and indirect relationships between the latent constructs and the voluntary business engagement for nature conservation. We see that we could accept all of our stipulated hypotheses (cf. Figure 1), except H2. Instead, perceived normative pressures had a significant indirect effect on the behaviour.

## 4.2 | Control variables

The full control variable specification of the base SEM-PLS (cf. Figure S1) changed the results only marginally regarding the path coefficients but not in direction or significance in both the structural model and the measurement model. The  $R^2$  increased by ~2 percentage points to 35% of explained variance (an adjusted  $R^2$  of 0.34). Of the control constructs, *company characteristics*, *customer markets* and *company size* exhibited significantly positive relationships with voluntary nature conservation engagement. The path coefficients of these control constructs were much smaller than the ones of our TPB-based model constructs, indicating sound theory-based model specifications.

Regarding company characteristics, cooperative and stock listed companies had significant, positive outer loadings. However, this



result should not be generalised due to the low number of both cooperative ( $n = 26$ ) and stock listed ( $n = 10$ ) companies in the sample (cf. Table S3). In terms of customer markets, business customers and private customers had significant outer weights, whereas public customers and other customers were not significant. Moreover, the company size mattered: the larger a company, the more likely are voluntary nature conservation actions. The sector and the respondent constructs were not significant.

## 5 | DISCUSSION

### 5.1 | Characteristics of companies engaged for nature conservation

Based on our results, we can draw a roughly sketched picture of a company that might be more inclined than others to support nature conservation. In line with studies from the environmental management literature, for example, González-Benito and González-Benito (2006) and Khanna, Koss, Jones, and Ervin (2007), we assume that companies with a larger number of employees are slightly more likely to be engaged for the protection of biodiversity. Similarly, Gattás et al. (2019) identified 70 companies worldwide that were engaged in valuing ecosystem services, out of which 40 were among the 2000 largest and eight were among the 100 largest companies in the world. One reason for this might be that companies of a larger size and a higher level of internationalisation tend to be under increased stakeholder scrutiny (González-Benito & González-Benito, 2006), which again underlines the role of stakeholders. Moreover, they presumably have a larger financial scope than smaller companies as well as job roles and departments that specify on related subjects, such as corporate social responsibility (CSR). This is likely putting them in a better position to organise voluntary activities and deal with biodiversity loss and ecosystem services as challenging and emerging topics for firms.

In addition, companies with business (B2B) and/or private (B2C) customers are more likely to be engaged than contractors of the public sector. This is of interest inasmuch as governmental authorities could quite easily make pro-biodiversity action a topic within public procurement requirements and reward committed companies with an advantage during the public tendering process. Consequently, public clients have unused potential to encourage contractors' commitments for the natural environment, which should increasingly be employed in future practices. It appears, though, that this aspect has been recognised in European politics: in its new EU Biodiversity Strategy for 2030, the EU Commission points out that public purchasing represents 14% of the EU GDP and announces to advance green public procurement criteria (European Commission, 2020).

Regarding ownership type, we expected a significant, positive relationship between owner-managed companies and nature conservation. This is because previous studies proposed that family firms are more active for corporate social responsibility and more responsive to environmental NGO pressures than nonfamily firms, for example,

Maggioni and Santangelo (2017). For instance, family business owners are thought to express their personal values through their business and closely link their family reputation to the company reputation (ibid.). Instead, our results showed that stock listed companies as well as cooperatives tend to be more engaged in nature conservation. This suggests that a form of collective ownership might make conservation commitments more likely as compared to an ownership by an individual or family. Given that it contradicts previous studies, this is a surprising finding because it raises the question of whether public good resources are more sustainably managed by collectively owned businesses instead of individually owned ones. However, due to the small number of stock listed and cooperative companies in our sample, we refrain from generalising this result but instead point out to an interesting area of future research. Finally, we were also surprised to find that business sectors were insignificant for the commitment to nature conservation in our model, even though company influence and affectedness regarding biodiversity loss are sector specific (F&C Asset Management, 2004; Smith et al., 2018; van Oorschot et al., 2020). Natural resource-dependent sectors, such as tourism or food retail, are generally thought to have a high self-interest in protecting our natural environment, but our results do not allow us to add to the discussion in this regard.

### 5.2 | Factors influencing companies' voluntary conservation commitments

Our study shows that voluntary conservation commitments of companies in secondary and tertiary sectors are influenced by direct drivers (attitude, perceived difficulties and intrinsic motivation) as well as indirect drivers (perceived normative pressures from stakeholders).

#### 5.2.1 | Direct factors

The strongest predictor for a voluntary nature conservation engagement is a favourable attitude. For this, it is essential that managers recognise a link between nature and their business, which exists, for instance, when a business depends on natural resource inputs, when it has environmental goals and strategies, when it targets environmentally conscious customer markets, and/or when it has company locations in or nearby protected areas. Aside from perceiving conservation issues as relevant, prospective benefits are decisive for a favourable attitude, especially image gains, employee retention and motivation, as well as the protection of natural resource inputs. This is an important result of our study, given that some previous studies found that companies typically consider biodiversity and ecosystem services commitments as philanthropy with only a few own benefits to be gained in return (Koellner et al., 2010; Krause & Matzdorf, 2019; Smith et al., 2018; Thompson, 2018b). Similar to our result, Hassan et al. (2020) argued that disclosures about company impacts on biodiversity and threatened species stems from self-interest instead of a selfless desire to preserve the environment. In

terms of risk, we found that the fear of public criticism and potential greenwashing accusations did not significantly influence the engagement, as proposed by Krause and Matzdorf (2019). A potential explanation for this might be that our study considered any form of corporate conservation action, whereas theirs focused on a purchase of 'biodiversity and ecosystem services credits', which were associated by some study participants with an ineffective 'carbon credit' market (*ibid.*). Another explanation might be that our sample mainly comprised of medium-sized companies from manufacturing, healthcare and social, retail and other service sectors (*cf.* Table S3), most of which might not count as high environmental impact industries. Research by Torelli et al. (2019) found that stakeholders had higher perceptions of corporate greenwashing and stronger reactions to environmental scandals if the companies belonged to environmentally sensitive industries, such as mining, energy or chemicals. Therefore, companies in our sample might have felt to be under relatively low stakeholder scrutiny with subsequently lower greenwashing risk.

Furthermore, our results show that the effect of intrinsic motivation on conservation action is considerably lower than the effect of benefit expectations. We see that rather low levels of business action for nature conservation to date might consequently stem from companies' low benefit expectations when considering a potential engagement. Due to certain characteristics of biodiversity and ecosystem services as public goods, a self-interested business case for nature conservation might still be quite rare in practice (van Oorschot et al., 2020). This holds true despite the fact that over the last decades, much effort and progress have been made to economically evaluate biodiversity and ecosystem services on a societal as well as business level, with the goal to highlight and consider natural assets in decision-making processes (Costanza et al., 2017). In light of our results, the work of business and government alliances (e.g., EU Business @ Biodiversity Platform, Value Balancing Alliance), tools and frameworks (e.g., Natural Capital Protocol, ENCORE tool, Integrated Biodiversity Assessment Tool) and training outreach projects (e.g., We Value Nature campaign) seem crucial. Similarly, de Silva et al. (2019) call for decision-support tools that help companies to realise their biodiversity-related risks, not just on the level of operational threats but also in terms of regulatory delays or image risks. Such efforts would continue to make the relevance of nature understandable and thus manageable for as many companies as possible—from big corporations to small and medium-sized enterprises.

Furthermore, the ability to engage in conservation matters might be limited by (1) the availability of financial means, (2) the need to justify expenses to colleagues and (3) the knowledge on how to be engaged for conservation in the first place. This is in line with previous papers that highlighted the significance of capabilities, skills and resources for environmental business commitments, for example, Boiral et al. (2015), Cantor, Morrow, McElroy, and Montabon (2012) and Ervin et al. (2013). To further illustrate this point, Krause and Matzdorf (2019) revealed that some companies feel confronted with overdemanding funding requests by environmental NGOs, which exceed their ability and/or willingness to pay and which makes the justification of voluntary expenses more challenging. Following the

results of our study, alleviating the perceived difficulties is a promising way to stimulate corporate actions for conservation. This can be done through numerous forms of support, for example, further developing, growing and promoting information platforms and learning materials, thematic business networks and personal consultation services. Such knowledge sources could provide information about conservation projects that seek financing at flexible amounts, ideas for greening company premises, best practices for biodiversity-friendly value chain management, guidelines for biodiversity assessments and checklists, natural capital accounting and so on. In Germany, the government-initiated Biodiversity in Good Company initiative is specialised in disseminating biodiversity-relevant information and therefore plays an important role in this context. In addition, sector associations and local Chambers of Industry and Commerce are important points of contact for companies. Strengthening their expertise about biodiversity and natural capital could enhance their disseminator role for corporate nature conservation commitments. The government could assist such a process by employing nature conservation experts in public institutions, such as the Chambers of Industry and Commerce, as well as sponsor relevant training courses for companies and multipliers.

## 5.2.2 | Indirect factors

Stakeholder expectations are another potential leverage point when exploring ways to enhance business action for nature conservation. We found stakeholders to have an indirect influence on the conservation actions of companies. This result confirms a previous study, which found no direct effect between stakeholder pressures and environmental business commitments either (Carrillo-Higueras et al., 2018). Yet, an indirect influence does not necessarily indicate a lower importance (Papagiannakis & Lioukas, 2012). On the contrary, our analysis shows primarily a pressure-attitude-behaviour chain, in which stakeholder expectations are the initial and fundamental component. As such, our paper is in accordance with the environmental management literature that generally highlights stakeholder significance (Ervin et al., 2013; González-Benito & González-Benito, 2006; He et al., 2019; Murillo-Luna et al., 2008).

Our analysis revealed that currently, only three stakeholder groups were significant for companies' conservation activities, namely, (1) customers, including private and business customers, (2) employees and (3) the general public. In other words, the drive of German business commitments for biodiversity protection presently stems from these groups. Similarly, the 2019 global CEO study stated consumer and employee pressures as most influential drivers for corporate sustainability actions (Gupta et al., 2019). Through green consumerism, private customers incentivise companies to develop green products and services, which may trigger a wider green corporate culture and environmental behaviour (He et al., 2019; Khanna et al., 2007; Moser, 2015). Also within business partnerships, sustainable supply chain practices are increasing (Gupta et al., 2019). For example, Daimler, the largest car manufacturer in the world, announced in 2019 that a CO<sub>2</sub>-neutral production will become a requirement for all suppliers,

which exemplifies the power of business customer pressures. Employees are an important stakeholder group because their perceptions on the sustainability practices of their company influence their motivation, job satisfaction, loyalty and organisational commitment (Choi & Yu, 2014; Lee & Chen, 2018). Furthermore, a positive business reputation is relevant for attracting new talent: research has found that young job seekers are sensitive to corporate responsibility issues and demand meaningful job activities (Gupta et al., 2019; Klimkiewicz & Oltra, 2017; Waples & Brachle, 2019). Regarding the general public, a widespread increase in public awareness for environmental challenges and sustainability is observable (Gupta et al., 2019). For instance, in Germany, the demands of 'Fridays for Future' and issues regarding declining pollinator populations, among others, have increasingly become topics of public discourse. Such exemplary developments of the public attention are beneficial for driving corporate conservation commitments, as we have evidenced. Consequently, people's actions and interest in nature matter to companies—may it be as customers, employees or as part of the society at large.

Irrespective of this importance, the overall stakeholder potential to drive firms' conservation commitments is far from being exhausted. Our results show that companies presently perceive all stakeholder pressures for nature conservation as quite limited: expectation levels have on average been rated as low to medium (cf. Table 1). With this, we confirm weak stakeholders pressures for corporate conservation activities, as reported by Krause and Matzdorf (2019). Expectations of financial institutions were rated the lowest in our survey, which shows that they currently do not foster biodiversity commitments within the wider business community. Banks, investment and insurance companies have the power to act as agents-of-change due to their direct dialogue with businesses and their impact through defining investment criteria (van Oorschot et al., 2020). However, despite that around 90 financial institutions signed the Equator Principles (i.e., a framework for managing environmental and social risk in project investments), none of them stated biodiversity-related lending requirements (de Silva et al., 2019).

Governments obviously have a large potential to stimulate corporate action for conservation as well. Remarkably, we found that political pressure is presently not significant for driving voluntary conservation activities of German firms in secondary and tertiary sectors. Moreover, as reflected by a large standard deviation (cf. Table 1), managers perceive the level of political expectations for nature conservation quite differently. This may indicate that expectations by the regulator may be limited to the primary sector, which was not included in our sample; that current policies and incentives are not consistently taking biodiversity issues into account and/or that political standpoints and expectations regarding voluntary conservation activities are not clearly communicated to the wider business community. However, there are more instruments in the policy toolbox than clearly communicating expectations about business commitments; see for instance Taylor, Pollard, Rocks, and Angus (2012). The government could consider whether new regulative approaches are feasible to speed up the much needed progress towards nature protection. The options to do so are vast and might range from command-and-control

instruments, for example, a straightforward conservation tax, to economic incentives, for example, a reduced value-added tax for eco-certified products and services, biodiversity-oriented public procurement criteria, all the way to nudging approaches. Increasing reporting requirements on biodiversity issues might be another effective approach because, so far, only very few of the world's largest companies provide substantial reporting about their impacts on biodiversity and threatened species (Hassan et al., 2020). Moreover, as Cadez, Czerny, and Letmathe (2018) have shown in the case of corporate climate strategies, already the uncertainty regarding future regulation leads to increased corporate emission reductions as a risk hedging strategy. Similarly, announcing biodiversity-related regulation might enhance anticipatory compliance for biodiversity as well. To make corporate conservation initiatives more commonplace, better economic incentives, regulation and support from the government and financial institutions is likely necessary. The recently published EU Biodiversity Strategy for 2030 describes an ambitious political agenda and gives reason to hope that future governmental interventions in the EU will be increasingly geared towards nature conservation (European Commission, 2020).

It is also important that companies are enabled to contribute to conservation goals in a meaningful way. To ensure this, they would need to be better involved in the design and implementation of global biodiversity frameworks, as highlighted by Barbier et al. (2018) and Smith et al. (2019). International strategic agreements, especially a post-2020 global biodiversity framework, could formally integrate companies and set clear responsibilities for conservation targets, expressed in a language of opportunity and risk that businesses can understand (ibid.). Aside of the needed collaboration between businesses and policy makers, partnerships between companies and NGOs are essential as well (Macellari et al., 2018; Potdar et al., 2016). Among others, business-NGO-partnerships help companies to monitor the effects of their conservation efforts (Rainey et al., 2014), which in turn would help to justify expenditures, inform about effective forms of conservation action and ensure credibility. Finally, as described by Seymour (2020) on the example of corporate tree planting, companies should participate, if possible, in professional, long-term protection initiatives that build on previous lessons learnt. Due to complex, systemic socio-ecological interactions, companies should pursue a diverse range of conservation goals, such as watershed protection, biodiversity and meeting the needs of local communities, instead of only focussing on singular goals, such as carbon mitigation or timber production (ibid.).

### 5.3 | Limitations

Our results reflect the influencing factors for a voluntary nature conservation engagement of secondary and tertiary sector companies. Companies of the primary sectors, that is, mining, agriculture and forestry, were not sampled for our survey so that our results do not apply to them. Moreover, our findings give an overview of the drivers for conservation, but they are not sector specific. Due to the different

ways and intensities that businesses are affected by biodiversity loss (F&C Asset Management, 2004), a sector-focused survey might have generated different results. Nonetheless, we see a high value in our meta-level study to identify leverage points for stimulating voluntary engagement within the business community at large. In addition, our results might not be transferable to all other countries but only those with a similar regulative, political and cultural system. For instance, culture has an impact on organisational behaviour as well as the broader institutional environment (Ronen & Shenkar, 2013). It was found that the German culture is most comparable with Switzerland and Austria and somewhat similar to Nordic countries such as Sweden and Norway (*ibid.*).

Despite having a good sample size for our data analysis, our survey achieved a low response rate (cf. Section 3.1), which is commonly said to impair data generalisability. Nevertheless, we found representativeness of our data with respect to both federal states and company sizes (cf. Table S1). In addition, we succeeded in encouraging managers to participate whose companies have not previously been committed to nature conservation. Thus, our survey captured diverse perspectives and opinions, not only of those already involved in safeguarding nature. For this reason, we argue that our study was indeed able to produce valid results despite a low response rate.

Lastly, it is also important to point out that our SEM results may only be interpreted for the present situation. For instance, our results showed stakeholder pressures that currently drive corporate commitments to nature conservation. What our model does not reveal is whether presently insignificant stakeholder groups, such as financial institutions or the government, would have a significant influence if their requirements for corporate conservation action would intensify.

## 6 | CONCLUSION

The goal of our paper was to investigate factors that promote companies' voluntary commitments to nature protection. Based on survey data from 618 German businesses, our adapted TPB model explained about one third of the variance in companies' stated behaviour. We found a pressure-attitude-behaviour chain, in which a favourable attitude towards conservation was the strongest direct predictor for corporate conservation actions. Perceived ability and intrinsic motivation were significant factors as well. Perceived normative pressures had no significant direct effect but significant indirect effects by increasing a favourable attitude towards nature conservation and by reducing perceived difficulties to be engaged. This suggests that stakeholder expectations have an indirect positive impact on voluntary conservation commitments of companies. Nevertheless, business contributions to biodiversity protection have been too small scale (Barbier et al., 2018) and the extent to which companies perceive stakeholder pressures is so far not adequate for the scale of environmental degradation. While the current rate of biodiversity loss is threatening a sixth mass extinction (Dinerstein et al., 2019), it is questionable whether stakeholder pressures and voluntary business commitments

can actually rise soon and fast enough to divert our trajectory towards irreversible ecological destruction. The question remains as to what can be done to speed up such engagements. Our results reveal various leverage points that can be used to increase voluntary business engagement. Soft measures include informational campaigns as well as methods and tools that enable firms to understand and manage their natural capital risks. Our results suggest that increasing the awareness of managers about nature's relevance for business—also those of secondary and tertiary sectors—is a major leverage point in spurring corporate conservation involvement. State actors could also set an example as customers themselves and give preference to biodiversity-friendly companies in their procurement. A comprehensive policy mix, including economic incentives and stricter regulation, would help to mainstream biodiversity as a relevant topic within the wider business community. Moreover, the indirect effect of stakeholder pressures shows that people in their role as customers, employees and as part of the general public have the power to drive actions of companies to safeguard natural resources and biodiversity. In the end, conserving natural capital requires a concerted effort by civil society, business, and regulators. Scientists proposed the Global Deal for Nature, in which they pledge to formally protect 30% of terrestrial lands by 2030 and 50% by 2050 (Dinerstein et al., 2019). Such ambitious, science-based propositions should translate into strategic biodiversity frameworks and guide governmental and business action worldwide.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest related to this research.

## AUTHOR CONTRIBUTIONS

M.S.K. was responsible for survey design and data collection as well as writing and editing of the manuscript. N.D. and M.S.K. jointly conducted the data analysis and results interpretation. N.D. also contributed to the writing and editing of the manuscript. B.M. contributed to the survey design and editing of the manuscript.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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