

Innovative green employees: the drivers of corporate eco-innovation?

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Abstract: Previous studies have increasingly referred to the green employee as a promising resource for eco-innovation. However, as the concept was only vaguely defined until recently, empirical research is missing. Thus, this paper explores ‘innovative green employees’ and their potential for eco-innovation, based on interview data from four green German companies of a small to medium size. We find that such employees mainly contribute to corporate eco-innovation by generating and discussing pro-environmental ideas. In our sample, these ideas mainly revolve around fostering eco-friendly consumption at the workplace. Further, our results suggest that innovative green employees contribute to corporate greening by transforming the values and behaviours of colleagues as environmental role-models and opinion leaders. To this end, they draw on their environmental knowledge, professional and private networks, authenticity and credibility as well as on the dialogue culture present in their company.

Keywords: eco-innovation; employee innovation; green employee; environmental green behaviour; corporate greening.

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1 Introduction

Not too long ago, most companies reduced addressing environmental issues to regulatory compliance and trade-offs with corporate goals (Triguero et al., 2013; Yarahmadi and Higgins, 2012). Today, however, more and more firms are becoming aware of the potential benefits of environmental performance and are increasingly integrating the concept of environmental sustainability into their business strategy (Cai and Li, 2018; Solovida and Latan, 2017). A key factor for potentially enhancing environmental performance is seen in *corporate eco-innovation* (Fernando and Wah, 2017; Singh et al., 2019), defined as the “introduction of any new or significantly improved product (good or service), process, organisational change or marketing solution that reduces the use of natural resources (including materials, energy, water and land) and decreases the release of harmful substances across the whole life-cycle” (The Eco-Innovation Observatory, 2012, p.8).

Research on eco-innovation has seen an upsurge in recent years (Hojnik and Ruzzier, 2016), focused mainly on identifying its external drivers and barriers (Bocquet et al., 2017; de Jesus and Mendonça, 2018). Only recently, however, have academic studies begun to explore employees as a central source of innovations aimed at positive environmental impacts (Delmas and Pekovic, 2018). In line with the open innovation paradigm (Chesbrough, 2003) and concepts like employee-driven innovation (EDI) (Høyrup, 2010), this growing research niche has predominantly explored the potential of

employees who – according to their job description – are not explicitly expected to engage in innovation work (DuBois et al., 2013; Ramus and Steger, 2000).

Such ‘ordinary employees’ typically possess company-specific contextual knowledge, profound expertise and problem-solving skills that may serve as key resources for corporate innovation (Høyrup, 2010; Süßbauer et al., 2019a, 2019b). In addition to this knowledge from daily practice in the workplace, empirical studies have shown that certain individual characteristics of employees may positively influence their innovative potential (Bäckström and Bengtsson, 2019), including intrinsic motivation (Buech et al., 2010) and self-leadership (Echebiri, 2020).

In the field of eco-innovation, scholars have repeatedly suggested that employees with particularly strong environmental values might be promising (Buhl et al., 2016; Ciocirlan, 2017; Schmidt-Keilich and Schrader, 2019). It has been argued that such ‘green employees’ are eager to bring in their private values to the workplace (Harrach et al., 2020; Muster and Schrader, 2011) and, thus, are considered to be highly motivated to engage in eco-innovation activities there. As task motivation can positively influence creativity (Amabile et al., 1996; DuBois et al., 2013), the ideas of such employees about enhancing corporate environmental performance are expected to be highly creative. Based on their pro-environmental consumption behaviour, green employees tend to possess domain-specific use knowledge, which is a key resource for the development of corporate product innovation (Schweisfurth and Herstatt, 2014). Further, empirical studies suggest that green employees are inclined to activate their internal networks and mobilise colleagues to undertake pro-environmental projects that might be the starting point for eco-innovation development (Anderson and Bateman, 2000; Ciocirlan and Pettersson, 2012).

While there are many quantitative studies analysing the effects of employees with pro-environmental orientations on the sustainability of their organisations, it is still poorly understood exactly what these employees do to contribute towards corporate greening, meaning the process by which a company becomes more environmentally responsible (Schaefer and Harvey, 1998). Therefore, the present qualitative study explores whether and in what ways green employees can be particularly valuable for corporate eco-innovation. To approach an answer to this question, we draw on semi-structured interviews with 19 employees of four German SMEs from the energy, media, mail order, and medicine/cosmetics industries. We examine their personal characteristics and test whether they comply with the definition of green employees proposed by Ciocirlan (2017), which to our knowledge currently represents the most elaborate in the literature. Further, we investigate how these innovative green employees contribute to corporate eco-innovation and spotlight the individual and organisational resources they draw upon. For organisations, it is crucial to know which types of employees have the greatest potential to successfully promote eco-innovation so that they can then create an organisational framework that fosters and supports their innovative activities (Süßbauer and Schäfer, 2019). The study was conducted as part of the research project IMKoN (Integration of Employees As Consumers in Corporate Sustainability Innovation Processes), which ran from 2015 to 2018 and was funded by the program for Sustainable Economy of the German Federal Ministry of Education and Research.

The rest of this paper is structured as follows: After explaining our theoretical background (Section 2), we describe our methodological approach (Section 3). Then, we present our findings (Section 4), discuss our results (Section 5), and point out implications, limitations as well as possible future research avenues (Section 6).

2 Theoretical background

2.1 The concept of the green employee

Previous studies in the organisational and environmental literatures have often referred to green employees as those who possess environmental values and are intrinsically motivated to protect the environment (e.g., Mandip, 2012; Renwick et al., 2013). Recently, Ciocirlan (2017, p.52) has more precisely delineated the concept, proposing that “a green employee has an environmental identity, an intrinsic motivation to protect the environment through work, and aims for consistency between home and work environmental behaviours”. In contrast to research focused on green leadership (Ones et al., 2010), Ciocirlan (2017) points out that green employees can be found throughout organisations – at all hierarchical levels. Further, green employees form their environmental values and beliefs both at work and in their private life (e.g., Andersson et al., 2012), building a cycle of reciprocal spillovers described by Muster and Schrader (2011) as a “green work–life balance”. However, Ciocirlan (2017, p.53) also argues that green employees “might differ in the extent of their commitment to their environmental identity”, meaning that some may be more dedicated to achieving environmental goals than others. Following segmentation analyses of employees that distinguish between laggards, late majority, early majority, early adopters, and innovators, depending on their degree of motivation to adopt environmental innovations (e.g., DuBois et al., 2013), Ciocirlan (2017) expects that green employees will also differ with respect to the types of behaviours they typically perform. The majority of green employees might, for example, regularly engage in rather low-intensity environmental behaviours, driven by habit and environmental concern, as an extension of their domestic behaviour (Smith and O’Sullivan, 2012), whereas only a subset of green employees is expected to perform high-intensity environmental behaviours, as these are associated with more visibility, risk and potential costs.

The potential of employees who exhibit a more or less pronounced environmental orientation towards promoting corporate greening has also been addressed by other concepts, such as the ‘environmental champion’ (Anderson and Bateman, 2000), ‘environmental issue supporter’ (Sonenshein et al., 2014) or ‘green change agent’ (Wright et al., 2012). However, whereas these concepts have only been applied to address employees holding specific corporate functions (e.g., sales representatives), theoretically any staff member of an organisation may exhibit green employee characteristics, as conceptualised by Ciocirlan (2017). Therefore, in the remainder of this paper, we adapt Ciocirlan’s definition and consider having an environmental identity, an intrinsic motivation to protect the environment through work, and consistency between home and work environmental behaviours to be key characteristics of green employees.

2.2 (Green) employee potentials for eco-innovation

The potentials of green employees for the development of eco-innovation in organisations have been discussed in various studies (Buhl et al., 2016; DuBois et al., 2013; Schrader and Belz, 2012). DuBois et al. (2013) expect green employees to be intrinsically motivated to engage in eco-innovation development, whereas Buhl et al. (2016) emphasise the role of a strong green identity for green employee motivation to participate in eco-innovation activity. Some authors refer to empirical studies identifying

having a green identity as a crucial determinant of high-intensity pro-environmental behaviour at work (Ciocirlan, 2017; Matsuba et al., 2012; McDonald, 2014; Stets and Biga, 2003). We follow this line of argument and expect innovative green employees to exhibit a high intrinsic level of motivation to support corporate eco-innovation.

Motivation is considered to greatly influence creativity (Fischer et al., 2019), which is a central resource of innovation (Amabile et al., 1996). In the context of eco-innovation, Chen and Chang (2013) have coined the term ‘green creativity’ to describe the development of innovative pro-environmental solutions. As green employees want to bring their pro-environmental values and beliefs into the workplace, we expect them to be highly motivated to engage in eco-innovation, leading to positive effects on their green creativity.

Further, we expect green employees to possess a great amount of environmental knowledge and skills, resulting from their environmental engagement in private settings (Anderson and Bateman, 2000; Buhl et al., 2016). Participation in eco-preserving initiatives, in environmental volunteer work or in a renewable energy cooperative may enhance domain-specific knowledge and provide inspiration for pro-environmental ideas. Next to motivation, domain-specific knowledge is a key element of individual creativity (Schilling and Green, 2011). We argue that green employees have generally built up a degree of environmental expertise and, as a consequence, may access relevant domains for the ideation of eco-innovations. Buhl et al. (2016) particularly emphasise the significance of green employees’ private consumer experiences for eco-innovation development. The environmental impact of an innovative product is significantly determined by the way it is purchased, used and disposed of rather than by its related manufacturing processes (Kammerer, 2009). Therefore, the integration of consumption knowledge in eco-innovation development is considered vital (Liedtke et al., 2015; Schrader and Belz, 2012). In line with the concept of sustainable embedded lead users of Schmidt-Keilich and Schrader (2019), we argue that green employees’ private consumption knowledge and experiences constitute a potentially valuable resource for eco-innovation activities.

In addition to engagement in official innovation processes (e.g., appointments on work councils), green employees might also support the development of eco-innovation in rather informal ways (Anderson and Bateman, 2000; Ciocirlan and Pettersson, 2012). Like environmental champions, green employees might use coalition building and inspirational appeal to mobilise fellow colleagues and supervisors to spread their eco-related vision and push environmental issues to the top of their organisations’ management agendas (Ciocirlan, 2017).

Given these potentials, Buhl et al. (2016) have called for empirical research on the contributions of green employees towards eco-innovation. Responding to this call, here we investigate the resources green employees deploy and the behaviours they engage in to foster corporate eco-innovation development.

3 Methods

A phenomenon-based research perspective (Krogh et al., 2012) is adopted here to investigate innovative green employees, based on interview data. This approach, which has been similarly employed by other scholars (Beverland, 2005; Schweisfurth and

Herstatt, 2014), seems appropriate in light of the present lack of empirical knowledge regarding innovative green employees and their potential for corporate eco-innovation.

3.1 Sampling and data collection

In order to observe the phenomenon under study, our sampling approach focused on a context in which we expected innovative green employees to be engaging in corporate eco-innovation. As we assume that green employees tend to be attracted by companies with an above-average environmental orientation, we selected four companies from different sectors (mail order, media, energy, medicine/cosmetics) that are considered pioneers in the field of sustainable, and, in particular, environmentally friendly business management. Data collection was undertaken in 2016–2017; the sampled companies are all located in Germany and have participated in the IMKoN research project, in the context of which this study has been carried out.

For their leading role and socio-ecological achievements, the sampled companies have, subsequent to our study, been honored with numerous nominations and awards, including the Charge Award 2019 for electricity provider EWS Elektrizitätswerke Schönau eG as the best green brand (Charge Energy Branding, 2019), the European Business Award 2019 for the publishing company bio verlag GmbH in the category of corporate social responsibility and environmental awareness (bio verlag GmbH, 2019), the Green Brand of the Year Award 2020 in the field of textile and fashion trade for the brand Waschbär of the Triaz Group GmbH (Stern, 2020), and the nomination of the medicine and cosmetics company WALA Heilmittel GmbH for the German Sustainability Award Design 2021 (Stiftung Deutscher Nachhaltigkeitspreis, 2020). Each of the four companies was founded with the aim of offering products that allow customers to make an active contribution towards preservation of the ecological environment. They are characterised by ecological values that are firmly anchored in their corporate strategies, mission statements and organisational cultures (bio verlag GmbH, 2020; Elektrizitätswerke Schönau eG, 2020; Triaz Group GmbH, 2020; Wala Heilmittel GmbH).

To begin the data-gathering process, 725 employees from all four companies were requested to take an online survey in which they assessed their engagement in corporate eco-innovation as well as their own environmental orientation. To capture their engagement in eco-innovation, we built on the three-dimensional Innovative Workplace Behaviour (IWB) scale (Janssen, 2000; Scott and Bruce, 1994) and developed a nine-item scale of three dimensions (i.e., idea generation, promotion and implementation), represented by three items each. By adding phrases such as ‘eco-innovation’, ‘more sustainable way,’ or ‘company’s sustainability performance’, we adapted the original IWB items to the context of eco-innovation. The environmental orientation of the interviewees was measured by applying the six items of the GREEN scale provided by Haws et al. (2014). All items adapted from the literature were translated into German. In total, we received 454 completed questionnaires. From those employees who showed above-average results with respect to eco-innovation engagement and environmental orientation, we selected a random sample of 19 employees, with whom we conducted individual interviews lasting between 20 and 50 minutes, using a semi-structured interview guideline. All interviews were recorded and subsequently transcribed. Table 1 provides an overview of the characteristics of these interviewees.

Table 1 Characteristics of interviewees considered to be innovative green employees

ID	Industry	Function	Tenure (yrs.)	Age
1	Energy	Head of Strategic Business Development	2	37
2	Energy	Technical Support Locat Heat	0,75	33
3	Energy	Public Relations	8	44
4	Energy	Public Relations	13	54
5	Mail order	Project Lead Organizational Development	5	49
6	Mail order	Sustainability Department, Environmental and Energy Officer	5	50
7	Mail order	Sustainability Department (Textile Production)	6,5	31
8	Mail order	Dispatcher	5	53
9	Mail order	Graphics Assistant	1,5	32
10	Media	Sustainability Officer (Monitoring)	5	52
11	Media	Online Editor	3,5	30
12	Media	Editor	2	29
13	Media	Editor	4	54
14	Media	Editor	5	50
15	Media	Marketing	4	33
16	Medicine & cosmetics	Analytical R&D, Quality Officer	18	46
17	Medicine & cosmetics	Warehouse worker	30	58
18	Medicine & cosmetics	Sales	6	45
19	Medicine & cosmetics	Analytical R&D	6	32

The interview guide contained 30 questions. All interviews were conducted in German by Marc Schmidt-Keilich via telephone. We interviewed innovative green employees from different hierarchical levels and functional areas to inhibit informant bias, retrospective sense making, and social answering as well as to bolster reliability. Further, we relied on neutral, non-directive questioning techniques in an effort to avoid influencing interviewees. In addition, all of the informants voluntarily took part in the study and were motivated to talk to us, as the topic addressed their personal values and concern for the natural environment. It has been argued that such factors tend to increase cooperation with researchers and, as a consequence, the validity of interviewee reports (Miller et al., 1997). At the beginning of each interview, to foster frankness we assured the informants that their accounts would be kept confidential.

3.2 Coding, data reduction, and analysis

To reduce and analyse the data from the transcribed interviews, we applied qualitative content analysis, a method considered suitable for systematic, theory-driven analysis of large quantities of data (Kuckartz, 2018). The first step of our analysis involved a close reading of the complete set of interviews and the composition of memos and case summaries. Although we did not exclude any potential topics from our analysis in advance, we strongly focused on the personal characteristics of innovative green employees, their individual innovative behaviour, and the resources they draw on to engage in eco-innovation. As these themes are directly derived from our research question, they had been formulated into leading questions in our interview guideline and served as higher-order categories in our analysis. We further divided these categories into relevant subcodes inspired by relevant research from the literature (e.g., Ciocirlan, 2017; Schweisfurth and Herstatt, 2014; Smith and O'Sullivan, 2012; Hammond et al., 2011; Shalley et al., 2004). With this first draft of a code system, we carried out a test run by coding 20% of the material using the qualitative data analysis software MaxQDA. As some subcodes turned out to be irrelevant, we reduced our initial category set to eight subcodes. We then coded the complete interview material. Following a consensual

coding approach, considered an appropriate way to improve the reliability of coding processes (Kuckartz, 2018), the first and third authors of this paper coded the material independently. Afterwards, individual coding results were compared. For interview passages where different codes were assigned, each particular case was discussed to reach a consensus. This approach often led to a more precise definition of the respective code.

Subsequently, each subcode was analysed separately, including every coded passage belonging to this code. This led to further differentiation of the first-order categories by inductively determining subcodes directly from the interviews. Using this revised system of codes, we coded the complete set of interviews once more, again applying a consensual coding approach. Comparison and discussion of our coding results generated 10 subcodes, the relationships between which are depicted in Figure 1.

4 Findings

Our findings have been developed exploratively and have not been derived from or meant to test an established theory in the literature. However, our analysis of the personal characteristics of innovative green employees is an exception. Here, we tested whether our sampled employees seem to match the definition of a green employee proposed by Ciocirlan (2017).

In Figure 1 we have structured the relationships of causality between the categories and subcategories applied for our analysis. The following subsections discuss in detail the empirical findings from our interviews, as related to each (sub)category.

4.1 Personal characteristics

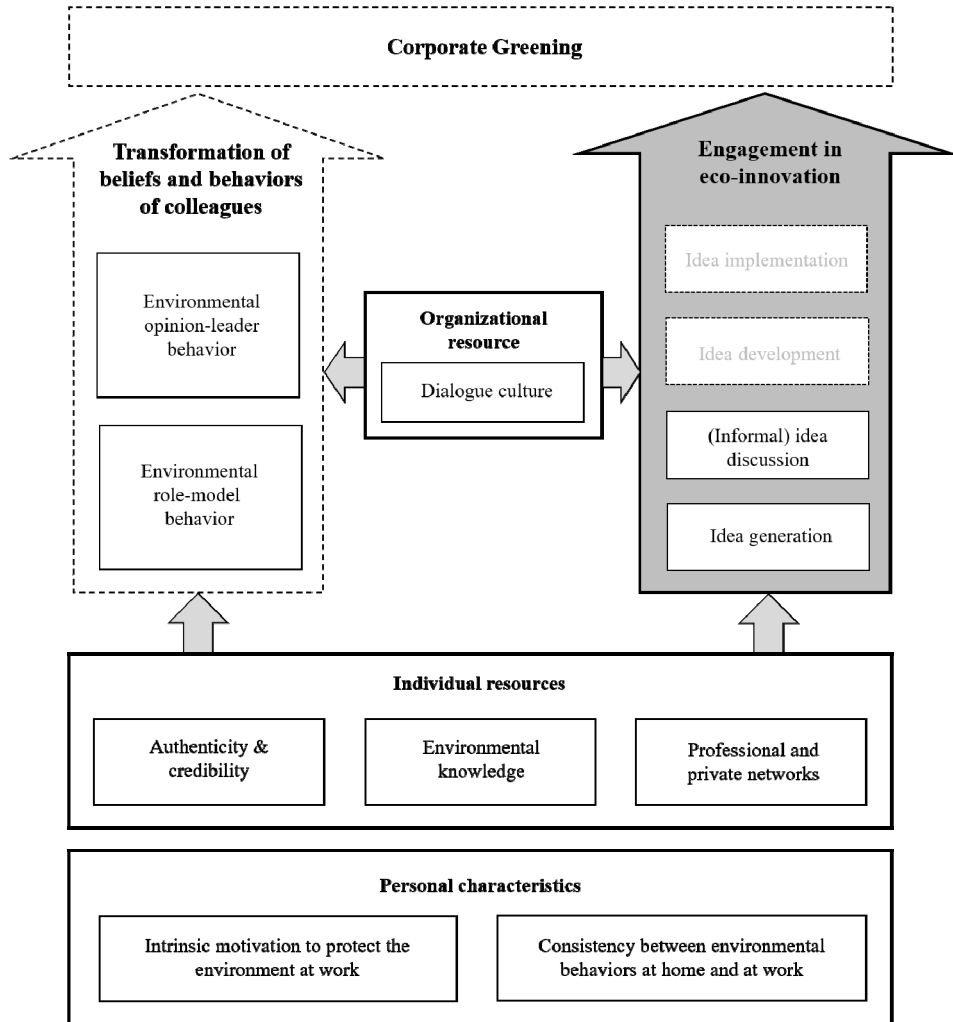
4.1.1 Intrinsic motivation to protect the environment at work

Our respondents' strong environmental orientation has significantly influenced their choice of employer. With only one exception, all of our interview partners selected their (then-)current employer due to the company's pronounced commitment to pro-environmental values. Asked why, they explained that they want to protect the environment, not only in their private domain but also while at work. Indeed, several employees revealed that they have accepted financial and/or career-related drawbacks in favour working their current job. Others mentioned that, due to their quite-high expectations with regard to the environmental performance of their employer, the number of possible organisations they would work for was quite small. A sustainability officer described her situation as follows:

"I always say that I can only work for companies like the WWF (...). I want my job to have meaning, where I do not have to be afraid to talk about why I work there. Unfortunately, not many employers come into question [as suitable workplaces] then, I have to say."

We further found that their intrinsic motivation to protect the environment branches out into engagement in eco-innovation. All but two of our interview partners perceived this engagement as part of their regular job, even if it was not covered by their official job description.

Figure 1 Innovative green employees: characteristics, resources, and behaviours



4.1.2 Consistency of environmental behaviours between home and work settings

For our respondents, it is self-evident that they engage in pro-environmental behaviour both in their private and their professional lives. In their efforts to protect the natural environment, a distinction between the two life domains appears to be irrelevant. A project manager put it as follows:

“Well, [at home] I don’t heat up 1.5 liters of water to use half a liter, and then let the rest cool down, only to heat it up once again. And this is how I do it here [at work] as well.”

To summarise, we find that, in addition to their distinct ecological orientation, our sampled employees are intrinsically motivated to protect the environment at work and strive for consistency between their environmental behaviours at home and at work. We therefore conclude that they meet Ciocirlan’s (2017) definition of a green employee.

However, we regard our interview partners as a sub-group of green employees, as they also exhibit a high level of innovativeness (see Section 3). Therefore, in the remainder of this paper, we refer to our respondents as *innovative green employees*.

4.2 *Individual and organisational resources*

In the preceding section, we have presented our findings with regard to the personal characteristics of innovative green employees. The present section focuses on the individual and organisational resources they draw on to foster corporate greening.

4.2.1 *Authenticity and credibility*

The environmental role-model and opinion-leader activities of innovative green employees rest upon the fact that their colleagues perceive them to be authentic and credible. Innovative green employees ‘live’ environmental sustainability in ways that can be observed within the company and are well known among colleagues. As a result, their pro-environmental acts and arguments are seen as highly credible by co-workers, which was key for the following interviewee:

“Well, I always think that when you exemplify it [i.e., environmentalism] through your own behaviour, when you live it all the way, you come across as more authentic and credible, which is always important to me.”

4.2.2 *Environmental knowledge*

Like authenticity and credibility, the environmental knowledge accumulated by innovative green employees plays a vital part in their efforts to spread pro-environmental behaviour and values among colleagues. A vast majority of our respondents categorised their environmental knowledge as rather broad and general. Some pointed out that, in addition, there were specific areas in which they had acquired expert knowledge via, for example, a recent private project, such as renovating their own home in accordance with ecological standards, or as required for their work-related professional expertise, such as managing the nutrition segment of a journal about natural food. An online editor explained this as follows:

“Well, I would say that I have a broad basis [of environmental knowledge] and that I know pretty well where I can get what information about which field or whom I have to ask. And, yes, in areas in which I am more interested – take vegan diets, for example, as I am a vegan myself – I know a bit more.”

4.2.3 *Professional and private networks*

Innovative green employees further profit from their established professional networks within the company to foster corporate greening. Apart from discussing ideas with like-minded fellow employees, they use their contact with individuals in key positions to, for example, put forward eco-oriented ideas. In this regard, a public relations manager remembered the following episode:

“About a year ago (...), I drove past the [company’s] building and thought: Wow, this is such a green golf lawn! In fact, it is not treated with pesticides or anything, but for me it simply was not a living lawn. On that same day, I approached a member of the board of the company and pointed [this] out to

him: “Gosh! Isn’t it possible to revamp the garden and transform it into a field of flowers for bees, bumble bees and other species?”

Next to their professional network within the company, innovative green employees are usually embedded within a broad pro-environmental network in their private life. This network – which often stretches from like-minded family members, friends and colleagues to eco-oriented organisations and initiatives – generally serves as their primary pool for pro-environmental inspiration and ideas. Indeed, for several of the ideas that our interviewees have brought into their companies, a direct link to a source in their private life could be established. A head of strategic business development reported that,

“In my close circle of friends, there are people who also work in this field. And, when we’re out, we cannot but talk 50% about this [environmental innovation] topic and discuss new ideas for which we maybe don’t have the time at work and, afterwards, we bring that into the company. I would guess that there are a lot of such ideas, driven rather by the private sphere.”

4.2.4 *Dialogue culture*

On an organisational level, the activities of our interview partners to foster eco-innovation and corporate greening were supported by a distinct culture of dialogue present in their respective companies, where informal exchange between colleagues on environmental topics is widespread and happens on a daily basis. Not only in the cafeteria during lunch breaks, environment-related gossip, news, ideas and opinions are shared and discussed elsewhere in the company as well. Often, innovative green employees approach fellow employees to spread and obtain information related to environmental protection. One interviewee reported that,

“I observe that more with regard to things we talk about. For example, a colleague last week told me that a shop opened recently offering organic clothing. Also, every now and then, a colleague drops by and asks about organic cosmetic products. This is obviously something I am well informed about (...). I have also talked to a colleague and exchanged tips on how to save on plastic usage by making [some products] yourself. These are just everyday items we exchange at work on a regular basis.”

4.3 *Engagement in eco-innovation*

In this section, we focus on the actual activities innovative green employees undertake with respect to eco-innovation development.

4.3.1 *Idea generation*

Innovative green employees introduce many eco-oriented ideas to their company. In the course of our interviews, all interviewees were able to name several ideas that they had recently put forward. Of these ideas, only two aimed at improving the environmental performance of a current market offering, whereas the other ideas addressed environmental improvements of the workplace. Without exception, these ideas were rather small in scope, in that they focused on quite limited environmental improvements within a specific department or location of the company. Consequently, rather than extensive personnel and financial resources or adjustment of internal processes, their implementation often required little effort. An online editor suggested the following:

“[B]eing a publishing house, we have lots of [extra] books, one reason for which is that we get a lot of review copies from other publishers, a lot of recipe books on nutrition. Therefore, I have suggested installing an open bookcase somewhere outdoors in the garden area, where it can be accessed by the public, where people from the surrounding area can come, take books, and bring them back again (...).”

Characteristic of all reported ideas is a rather low degree of novelty, also referred to as ‘newness’ (Johannessen et al., 2001). Novelty usually describes unique or very rare ideas (Runco and Charles, 1993) that few people come up with (Diedrich et al., 2015). In contrast, many suggestions made by innovative green employees appear to simply transfer their own private environmentally friendly behaviour into a work setting. A marketing manager brought up this representative idea:

“For several years, we had a pallet of printing paper for dot matrix printers in our storage, though such printers had been replaced a long time ago. Then, they said we should dispose of the paper, but I suggested giving it to a nursery school, as the paper could still be used there. At home, when I print something out and I notice it was botched up, I don’t throw it away either, if I can still use it as scratch paper.”

4.3.2 (Informal) idea discussion

When innovative green employees come up with pro-environmental ideas, they often do not directly submit them to official corporate idea-management channels. Instead, they tend to discuss their new approaches with colleagues first, most of the time in passing. As nearly all of the ideas of innovative green employees are workplace-related, this direct feedback loop with their potential target group is highly valuable. A project manager described this informal process in the following manner:

“There is an official idea management [channel] where you can describe and submit your ideas, but eventually these ideas will hit the desks of the sustainability department, I suppose. I prefer to discuss such ideas upfront with colleagues to get an idea whether the ideas are good. In particular, when I’m not sure about ... is it appropriate?”

Next to generating feedback, such informal discussions may also serve as incubators for utterly new ideas that have pro-environmental potential. Existing ideas might be discarded during such discussions, but inspiration to take another perspective may also arise, leading to new innovative approaches. A graphics assistant put it concisely:

“Well, we talk a lot to each other in our breaks, also about things like that. And, sometimes, things are developed further and new ideas develop.”

Yet, engagement of innovative green employees in the phases of eco-innovation development and implementation that usually follow idea generation and discussion appears to be very rare. Out of our 19 interviewees, only one reported that she pushed her idea to further development and supported its implementation.

4.4 *Transformation of colleagues' beliefs and behaviours*

Apart from their engagement in corporate eco-innovation, we have found evidence that innovative green employees foster corporate greening by transforming the values and behaviours of fellow employees.

4.4.1 *Environmental role-model behaviour*

Our findings show that innovative green employees intentionally assume the role of environmental role models who are well aware and make use of their potential to transform the beliefs and behaviour of colleagues. In particular, their behaviour commuting to work was repeatedly mentioned as an example. A project manager reported that,

“I have been cycling to work with my bike for two years in any weather. And I always pointed out that it's not that bad. Once you get on the bike, everything is great. And then my colleague started cycling to work. By now, she's the one cycling to work in any weather. And I am sometimes the shirker who takes the car (...). After she had started cycling to work, my colleague then sold her car. It's her only option now.”

4.4.2 *Environmental opinion leader behaviour*

Some innovative green employees go beyond mere role modelling by exhibiting environmental opinion-leader qualities. Especially in everyday situations at the office, such as in discussions in the copying room on the need to conserve resources, they insistently (and sometimes passionately) voice their opinions on ecological issues. However, opinion-leader activities exhibited by innovative green employees not only aim at preventing colleague behaviours that are potentially harmful to the environment but also strive to transform the values and beliefs of their colleagues towards a more pronounced ecological consciousness. A public relations manager described this motivation accordingly:

“Well, I do try to actively approach colleagues to get certain information in their heads and hearts so that a willingness for sustainability or a willingness for transformation develops.”

5 Discussion

By definition, green employees are intrinsically motivated to protect the environment while at work (Ciocirlan, 2017). Therefore, in principle, innovative green employees should also be motivated to engage in corporate eco-innovation. Our findings suggest that innovative green employees working at green companies perceive such engagement as part of their regular job, even if it is not covered by their official job description.

Innovative green employees generally contribute to corporate eco-innovation by introducing and discussing pro-environmental ideas. All of our interviewees have brought several ideas into their company in the course of the last year. In nearly all of the cases, the origin of the idea traced back to the employee's private domain. Resulting from their strong environmental orientation, innovative green employees have a high interest in technological, political and social developments in the field of environmental protection.

They typically possess a rather broad environmental knowledge as well as professional and private networks that serve as valuable sources for eco-related information, inspiration, and exchange of experiences. In addition, innovative green employees try to live according to their environmental values and strive to consume in an ecologically sustainable way. The majority of our informants were vegetarians, mainly consumed organic products and tried to avoid motorised private transport. As we had expected, innovative green employees tend to capitalise on their knowledge and experience stemming from consuming eco-friendly products and services to generate eco-related ideas.

To introduce an idea into the company, innovative green employees often bypass official idea-management channels. They deplore bureaucratic idea management systems that usually involve a great deal of effort to submit an idea. In addition, innovative green employees prefer to make use of their network within the firm to initially discuss their ideas with selected colleagues, as the vast majority of these ideas are focused on fostering more eco-friendly behaviour among employees at the workplace. Innovative green employees consider it to be a responsibility of their employer to provide necessary framework conditions that can enable eco-friendly consumption at work (Süßbauer and Schäfer, 2018, 2019). However, in order to lead to environmental benefits, there must also be a willingness on the part of employees to make use of such possibilities. Consequently, it makes sense for innovative green employees to present their ideas to their target audience first so as to get direct feedback before submitting them via official idea-management channels.

Many suggestions made by innovative green employees seek to transfer their own private environmentally friendly behaviour and routines into their work setting, qualifying as low-intensity behaviour as defined by Ciocirlan (2017) and Smith and O'Sullivan (2012). Typical examples like using recycled paper, carpooling to work or organising a clothes-exchange bazaar illustrate that such suggestions are exclusively workplace-related, tend to be limited in scope and seldom stand out as particularly creative. As the sometimes seemingly trivial nature of such ideas might be another reason why innovative green employees tend to refrain from using official idea-management channels, the question arises of what types of pro-environmental ideas can be reasonably expected from innovative green employees.

Unlike sustainable embedded lead users, innovative green employees' use knowledge and consumption experiences are applicable to generating all kinds of ecological solutions to a variety of situations within their company but are not necessarily geared towards improving its own products. However, relevant use knowledge of a specific product or service is key to innovation in general (Hippel, 1995) and eco-innovation in particular (Schrader and Belz, 2012). Sustainable embedded lead users are expected to have great potential to generate ideas for product and service solutions by tapping this specific knowledge. Without this resource, innovative green employees may find it difficult to come up with ideas that can meaningfully address improving the offerings portfolio of their company. Instead, innovative green employees and employees who exhibit lead-user characteristics with regard to workplace-related eco-innovation may complement the innovative potential of sustainable embedded lead users by introducing new ideas to green the workplace.

Further, as innovative green employees may theoretically be found in every corporate function, their professional background and specialist knowledge varies. As a consequence, they do not necessarily possess in-depth technical, intraorganisational or

procedural know-how. However, complex technological innovations, such as the implementation of eco-efficient manufacturing technologies, require this kind of subject-specific knowledge (Kanter, 1988). Innovative green employees may contribute to such technology-driven eco-innovations by, for example, raising awareness about promising green tech startups or new technology trends in the field of eco-efficiency. Nonetheless, detailed implementation proposals for technological solutions should normally be expected from specialists with appropriate expertise rather than from innovative green employees.

In contrast, innovative green employees typically have specialist knowledge in the field of eco-friendly consumption and bring related ideas into the company. However, it seems that they do not tend to claim ownership of or push these ideas forward. Unlike the green activist or the sustainable intrapreneur who “develops and promotes practical solutions for environmental or social challenges” and “pushes and pulls colleagues and supervisors towards these solutions” (Schrader and Harrach, 2013; p.185), innovative green employees rather appear to confine themselves to the role of inspiration and idea givers. Whereas our sampled eco-oriented companies represent a rather supportive context for the activities of innovative green employees, Blazejewski et al. (2018) have observed green activists pursuing their ideas in non-supportive corporate settings. Although both studies may only provide initial indications of green-employee behaviour, it seems that the influence of organisational factors, including leadership support and corporate culture, is significant and rather complex.

As idea implementation usually requires relevant experts with specific functional and strategic knowledge, it has been argued that participation of ‘ordinary’ employees in corporate innovation is particularly beneficial in the ideation phase (Axtell et al., 2000). Our findings are in line with this assumption and suggest that innovative green employees refrain from driving their own ideas forward. Such low levels of intrapreneurial spirit among innovative green employees could be due to the way they want to put their ideas into practice. Although innovative green employees consciously strive to foster pro-environmental consumption at work, they generally oppose dictating such behaviour. Instead, they are convinced that personal values and behaviour only change in a lasting manner out of inner conviction. Hence, instead of putting forward ideas that would make pro-environmental behaviour obligatory (e.g., a veggie day in the canteen), innovative green employees tend to promote critical thinking and awareness about ecological issues by setting a good example with their own eco-friendly behaviour. As environmental role models, they see themselves as possessing highly developed environmental knowledge and comprehensive first-hand experience from authentically living according to their environmental values, both within and outside the company. Therefore, their colleagues perceive them as being highly credible, which can stimulate imitation.

Interestingly, innovative green employees seem to consider their own eco-friendly consumption practices at work as a form of eco-innovation. Although this does not correspond to the definition of eco-innovation we have adapted for this study, it does reveal how innovative green employees understand eco-innovation and their approach to fostering it.

Some innovative green employees go beyond a mere role-modelling approach and take a more active stance towards spreading pro-environmental values and behaviour. On their own initiative, they address and uphold environmental values and try to convince fellow employees to follow their lead. In doing so, they pay careful attention to not

making moral accusations against their co-workers but, rather, endeavour to point out practical solutions for a more ecologically sustainable life.

6 Conclusion

6.1 Theoretical implications

With the present study, we seek to contribute to the existing research in three ways. First, we add to the literature by providing empirical support for Ciocirlan's (2017) definition of green employees: All of our eco-oriented interview partners are intrinsically motivated to protect the environment at work and strive for consistency between environmental behaviours in both life domains. Further, our findings provide insights into how these rather abstract criteria materialise in the lives of green employees. While it should be noted that the presentation of our findings has not been formulated as verifiable hypotheses, they should contribute towards better understanding of the still largely unexplored phenomenon of green employees and may provide orientation for further research.

Second, we have explored here the phenomenon of innovative green employees, a sub-group of green employees that, thus far, has not been explicitly addressed by theoretical or empirical studies. Building on the concept of green employees and exploring their potential for corporate eco-innovation, we have found that innovative green employees seem to mainly contribute towards corporate eco-innovation by generating, introducing and discussing pro-environmental ideas. Furthermore, our findings suggest that the contributions of innovative green employees in green companies mainly aim at fostering pro-environmental consumption practices among their colleagues and providing the necessary framework conditions to enable such consumption practices within their workplace. Their environmental role-model and opinion-leader activities also pursue this objective. In contrast, innovative green employees seem to make only very limited relevant contributions towards promoting innovations that can improve either the core processes or product portfolio of their employing company. In this sense, they seem to act more as multipliers of already existing, but environmentally progressive and beneficial, ideas, rather than as true innovators.

Our third expected contribution is to the literature on innovative behaviour inside the firm, since we have explored the resources that employees make use of to support corporate innovation (Scott and Bruce, 1994; Janssen, 2005). We have found that innovative green employees mainly access their broad environmental and consumption-related knowledge to specifically promote pro-environmental consumption practices at the workplace. Contrary to other resources that originate from employees' work environments, however, their environment-related knowledge is primarily rooted in their private domains.

6.2 Practical implications

From the insights of our qualitative study, we have derived some potential implications for practitioners. First, the findings indicate that innovative green employees may play a special role for corporate greening by driving behavioural change within the company. In order to make targeted use of their potential, then, it is advisable to identify existing

innovative green employees within the organisation and explicitly involve them in programs and measures aimed at driving cultural change and green transformation. Another way of enhancing, and perhaps multiplying, the benefits resulting from the specific knowledge and consumption experiences of innovative green employees is to increase their presence within the company by, for example, taking individual green values and lifestyles into account as selection criteria when selecting new employees (Jerónimo et al., 2020).

Furthermore, our results suggest that innovative green employees typically refrain from making use of official corporate idea-management channels and prefer to engage in informal dialogue-based exchange processes with colleagues. Against this background, it would seem advisable to create more opportunities for such informal exchanges between colleagues to take place (Axtell et al., 2000), such as during lunch breaks, team outings or through a more open architectural design of office spaces. This would give innovative green employees more opportunities to check the relevance of their ideas in discussions with colleagues, as such ideas, which typically aim at greening the workplace, often develop further through dialogue and could then be better adapted to the conditions in the company and the specific needs of its employees. Additionally, it could make sense to make the use of official idea-management channels more straightforward, thereby reducing the time and effort required to submit green ideas to decision makers.

6.3 Limitations and future research

We view this study as a first step towards investigating innovative green employees and their potential for corporate eco-innovation. Naturally, it also has limitations that may serve as cues for further research.

First, due to a lack of empirical knowledge in the literature, we have selected an explorative approach to gain an initial understanding of the phenomenon under study. While our findings provide an indication of how innovative green employees seem to contribute to corporate eco-innovation, we cannot at this point draw reliable conclusions about the scope of the phenomenon or the generalisability of our findings. It is therefore up to quantitative research to validate our findings and put them into perspective.

The second limitation of our study is linked to the condition that our participants self-reported their environmental orientation and activities supporting corporate eco-innovation. The use of self-reports for identification of environmentally aware employees is considered by some, doing similar research, to be a reliable and valid technique (Norton et al., 2015; Paillé and Boiral, 2013). In contrast, however, the limitations of this method have been described in detail by Podsakoff et al. (2012), and a meta-analysis by Kormos and Gifford (2014) suggests that the correlation between self-reports and objective measures of environmental behaviour is functionally small. With regard to environmental behaviour at work in particular, self-reports might be biased by social desirability, which might prevent people from accurately evaluating their green behaviour. Although our research results do not appear to provide a consistent and conclusive picture, the proposed effects might be even more pronounced in our sample companies, due to their distinct pro-environmental organisational cultures (c.f. Milfont, 2009; Roxas and Lindsay, 2012). As an alternative, future research could use additional sources, such as supervisor ratings (Hoffman et al., 2010) and peer nominations (Anderson and Bateman, 2000), to obtain more objective evaluation of participants' innovative green behaviour in the workplace.

As a third limitation, we concentrated on green SMEs to identify and recruit participants, as these tend to attract employees who are characterised by an above-average environmental orientation. It is, further, widely acknowledged that SMEs cannot afford to underutilise their workforce, and must rely on their staff for learning, innovation and creativity (Klewitz et al., 2012). Hence, we assumed that innovative green employee engagement for corporate eco-innovation is very likely to be particularly relevant for and observable within green SMEs. As a consequence of this specific context for our empirical investigation, our findings on the behaviour of innovative green employees do not allow easy generalisations in terms of how such employees might behave in other contexts, especially in non-green corporations. It can be assumed that the distinct organisational factors typically present in green SMEs – particularly a corporate culture characterised by values supporting the protection and preservation of the natural environment – decisively shape the roles and behaviours of innovative green employees (c.f. Dumont et al., 2017; Tahir et al., 2020). Moreover, chances are high that innovative green employees will be more prominent in SMEs than in large companies and, hence, are likely to be more extensively involved in eco-innovation development. In contrast, employee involvement and participation within SMEs typically do not rise to the level of functionality and professionalism found in large firms (Rohlfer, 2018), which usually offer organisational feedback channels such as sophisticated software tools to facilitate the submission and evaluation of employee suggestions (Gerlach and Brem, 2017). Meanwhile, suggestions promoting eco-friendly consumption behaviour by employees might struggle to get positive responses in non-green companies, as such approaches typically are not aligned with organisational goals. Consequently, and perhaps surprisingly, the biggest lever for contributing towards environmental protection might lie precisely in such large companies that are lagging behind in terms of corporate greening and, thus, have the greatest potential for improvement. Therefore, we call for future research to illuminate the behaviours of innovative green employees in different organisational contexts and how their potential may be affected by factors such as the specific organisational culture and size of their employing company.

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