

RESEARCH ARTICLE

Employees' engagement, family ownership, or gender diversity? Searching for determinants of SMEs' green behaviors in CEE countries

Michaela Kotkova Striteska | Katerina Myslivcova | Viktor Prokop  |
Lucie Zapletalova

Faculty of Economics and Administration,
University of Pardubice, Pardubice,
Czech Republic

Correspondence

Viktor Prokop, Faculty of Economics and
Administration, University of Pardubice,
Pardubice, Czech Republic.
Email: viktor.prokop@upce.cz

Abstract

Results of this study go against previous expectations regarding the positive effects of boards' and owners' gender diversity and family ownership on SMEs' green behaviors, expressed by the implementation of proactive environmental strategies (PES) and energy consumption monitoring (ECM). We show that such generally accepted and recommended concepts may not always work, specifically within Central and Eastern European (CEE) countries. Based on the foundations of stakeholder theory, we surprisingly reject hypotheses expecting positive effects of boards' gender diversity on SMEs' green behaviors. Compared to the research to date, we newly examine the effect of the frequency of manager–employee meetings on SMEs' green behaviors. We show that SMEs' implementation of PES and ECM requires a different frequency of employee engagements. In addition, we confirm that the presence of environmental managers is fruitful for the implementation of PES in family firms. We also reveal that family firms' ECM is significantly triggered by energy taxes, but also by the owners' gender diversity. By linking the managerial perspective including employees' engagement and PES with the technical discipline of ECM, this study provides several theoretical and practical implications.

KEYWORDS

environmental behaviors, gender diversity, SMEs, family firms, stakeholder theory

1 | INTRODUCTION

Over the past three decades, in response to the current environmental situation, an increasing number of firms have changed and adapted their strategies to be more environmentally friendly (Valero-Gil et al., 2017). Similarly, a growing body of literature advocated that the determinants of firms' environmental behaviors need to be analyzed not only for their positive environmental impacts, but also for their ability to trigger firms' competitive advantage (Delmas et al., 2011;

Porter & Van der Linde, 1995) and financial performance (Hall & Wagner, 2012; Liu et al., 2015). In this study, we focus on two components defining firms' environmental (green) behaviors—namely, proactive environmental strategies (PES) and energy consumption monitoring (ECM)—and test how these components are affected by generally accepted and recommended concepts, including stakeholders' (employees') engagement, family ownership, and gender diversity, on the sample of 2314 Central and Eastern European (CEE) SMEs. Within CEE countries, such analyses are rare, resulting in insufficient

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information sources for practitioners as well as for policymakers aiming at defining appropriate environmental policies (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023).

Starting with proactive environmental strategy, scholars argue that not all firms can benefit equally from a PES because only firms with sufficient resources and management capabilities can implement such a strategy (Clarkson et al., 2011; Hart, 1995). Therefore, prior research has sought to understand the drivers of firms' environmental strategies (Dekker & Hasso, 2016; Seroka-Stolka & Fijorek, 2020; Sharma & Sharma, 2011), with a specific focus on the role of various stakeholder groups (Garcés-Ayerbe et al., 2012; Valero-Gil et al., 2017). Despite this increased interest, Haleem et al. (2022) report that the results of previous research are mixed, confirming both significant and non-significant effects of stakeholder pressure on environmental practices. Likewise, not all stakeholders influence firms' PES to the same extent (Alt et al., 2015). Moreover, previous research has suggested that the link among stakeholder pressure and PES tends to vary significantly depending on firm size (Darnall et al., 2010). However, studies have thus far focused primarily on large firms (Kurapatskie & Darnall, 2013) or firms with a particularly positive attitude toward environmental issues (Madsen & Ulhøi, 2016). Therefore, given the fact that SMEs represent the backbone of the European economy (Trianni et al., 2014), make up a large proportion of EU businesses, and contribute more than two thirds of the global pollution (Madsen & Ulhøi, 2016), there is growing interest in how and why SMEs adopt PES (Hamann et al., 2017; Hoogendoorn et al., 2015; Tyler et al., 2020). Minciullo and Pedrini (2018) report that research on the role of PES within SMEs is absent or overlooked due to the difficulties of studying environmental issues in SMEs. Moreover, SMEs were previously seen as firms with low awareness of their overall environmental impact (Revell & Blackburn, 2007).

Regarding energy consumption monitoring, striving for energy efficiency (EE) represents one of the key themes in the European strategy for smart, sustainable, and inclusive growth (European Commission, 2006) and is seen as a crucial contributor for both European industrial competitiveness and green issues (Trianni et al., 2014). However, despite these efforts, *“many European firms still pay limited attention to energy efficiency targets and requirements set out in such directives despite the fact that adherence would likely be profitable for them”* (Gerstlberger et al., 2016, p. 88). This peculiarity, called the energy-efficiency gap (Jaffe & Stavins, 1994), refers to the differences which may arise between actual and optimum energy used (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023). Therefore, actions to increase the EE in Europe are needed, particularly for SMEs, which are perceived as the main consumers of energy and, at the same time, as those who are less efficient in comparison with large companies (Trianni et al., 2014). According to Fresner et al. (2017), SMEs represent a high share of energy consumption in Europe; therefore, there is a need for dialogue leading to such actions that will seek solutions to this problem. To date, SMEs' EE potential has remained largely untapped, and energy management practices suffer due to several barriers (Prashar, 2017), such as the lack of awareness of energy

consumption behaviors (Shrouf & Miragliotta, 2015). Moreover, Prokop, Gerstlberger, et al. (2023) show that large firms are more inclined to implement EE than SMEs within the CEE region.

Considering the determinants of firms' proactive environmental strategies (PES) and energy consumption monitoring (ECM), this study places increased emphasis on the role of stakeholder engagement, especially on employee engagement in the form of management–employee meetings. Employee engagement was previously confirmed as an important trigger of firms' green behaviors (Darnall et al., 2008; Mishra & Yadav, 2021), but we still know little about the effects of engagement intensity on firms' outputs (Prokop & Hajek, 2023). Such engagement can lead to additional effects in the form of, for example, the faster dissemination of current information, building social capital or increasing the knowledge, skills, and experience employees need to support firms' environmental behaviors and EE, as confirmed in recent studies (see Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023; Straub et al., 2023). In addition, as family-owned firms are widespread in most economies around the world (Sharma & Sharma, 2011) and have a strong historical tradition and extensiveness in today's economy and society (Bakoğlu & Yıldırım, 2016), we also focus on the role of family ownership. The results of research related to family firms and their impact on PES are thus far ambiguous and mixed (Dou et al., 2019). Berrone et al. (2010) state that family firms are more prone to apply environmental strategies and more likely to invest in PES (Sharma & Sharma, 2011), yet others have found no significant differences in the approach of family and non-family firms (Dangelico et al., 2019; Uhlaner et al., 2012) or even the opposite—that family firms do not emphasize the natural environment in their strategies as much as non-family firms do (Craig & Dibrell, 2006; Dekker & Hasso, 2016). Finally, we examine the role of owners' and managers' gender diversity, which is generally accepted as a trigger of firms' greenness (Audretsch et al., 2022; Horbach et al., 2023; Zhang et al., 2013), but whose effects on strategic decision-making in the form of PES, as far as we know, are not yet fully known in SMEs. Similarly, the effects of gender diversity on firms' EE cannot be completely generalized, especially in CEE countries (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023).

Our theoretical and empirical analyses contribute to the discussion on several fronts. First, we provide literature contribution by creating an original theoretical framework linking more managerial stakeholder theory with such technical discipline focusing on energy efficiency and energy consumption monitoring. Second, we extend the stakeholder theory by paying special attention to the role of employees and their meetings with managers. Here, we examine not only whether the meetings are implemented, but also their intensity. Our results show that SMEs' implementation of proactive environmental strategies and energy consumption monitoring requires a different frequency of employee engagements, which is highly relevant for firms' managers. Moreover, we confirm the importance of environmental managers, whose knowledge and experience can increase CEE firms' environmental behaviors and awareness. The results on the

determinants of firms' green behaviors, including the effects of energy taxes, are an important source of information for public policymakers in Europe. Furthermore, we provide information to practitioners and policymakers about the determinants of family firms' environmental behaviors. Finally, we contribute to the current debate regarding gender balance in firms and the influence of gender diversity on firms' behaviors.

Next sections are presented in the following way. Section 2 defines the theoretical basis of this study and current research gaps. The research questions and hypotheses are defined in Section 3, and the CEE context, data source and methodology are presented in Section 4. Section 5 shows our results that we discuss in Section 6. Finally, Section 7 concludes this study and includes our practical implications and future research agenda.

2 | THEORETICAL UNDERPINNING, LITERATURE REVIEW, AND RESEARCH GAPS

2.1 | Proactive environmental strategy (PES)

Anton et al. (2004) define PES as the set of firms' proactive environmental practices that are developed to prevent negative environmental impacts and go beyond the requirements of environmental regulations. More specifically, PES reflects future attitudes regarding the enterprise's environmental impact through voluntary efforts such as minimizing emissions, waste, and effluents; promoting green product development; and deploying environmental management systems (Kumar & Paraskevas, 2018; Zailani et al., 2012). Within this study, following these general definitions, we consider firms to be applying PES if they set strategic goals including green issues such as environmental changes.

Research to date has mainly focused on how large firms implement proactive environmental strategies as their environmental impact may be more direct and visible (Kurapatskie & Darnall, 2013; Seroka-Stolka & Fijorek, 2020). Gadenne et al. (2009) state that SMEs do not have the potential to affect the environment to the same extent as large enterprises. In addition, Leonidou et al. (2017) report that SMEs have a weaker environmental impact compared to large enterprises, so their relationship with the environment is also less conspicuous for the various stakeholder groups. In contrast, according to Eweje (2020), despite the impacts of SMEs being of rather little importance individually, their joint impacts can be enormous. Therefore, initial research studies on SMEs' proactive environmental strategies attempted to apply the framework used for large firms (Tyler et al., 2020). However, SMEs are not just smaller imitations of large firms. Due to their different characteristics, there is a need for a more concrete approach to SMEs (Lewis et al., 2015). Madsen and Ulhøi (2016) and Minciullo and Pedrini (2018) state that the differences between SMEs and large enterprises cannot be overcome simply by adapting the practices of large enterprises to the SME context. Therefore, there is an urgent call to investigate the attitudes and drivers triggering SMEs to apply PES.

2.2 | Energy consumption monitoring (ECM)

Monitoring energy consumption is a critical feature of best practices in enterprise energy management (Sivill et al., 2013), which is an essential part of proactive environmental strategies. Considering the energy crisis and the fact that funds flowing into EE are not as high as their potential (Economidou et al., 2020), we can say that the implementation of ECM, in step with PES, is relevant for SMEs. Moreover, Gerstlberger et al. (2016) find a positive link among firms' environmental efforts and the use of energy-efficient technologies. Therefore, striving to monitor energy consumption, together with efforts to reach energy efficiency, can benefit companies in several ways, such as by resulting in lower production costs (Wen et al., 2022). However, as energy management is not only a technical discipline, but also multidisciplinary in nature, there is a need to combine this discipline with managerial ones (Shrouf & Miragliotta, 2015), which is not an easy task. Therefore, despite the countless demonstrable advantages and the ever-increasing interest in issues related to achieving EE, we see more fragments of research combining managerial theories with such technical firm aspects (Prokop, Gerstlberger, et al., 2023). Consequently, a unified, comprehensive theoretical framework has not yet been developed (Prokop, Hojnik, et al., 2023). Within this study, we define and consider firms to be applying ECM if they have monitored energy consumption over the last three years.

Considering SMEs and recent research findings such as Trianni et al. (2014), Fresner et al. (2017, p. 1658) state that, "despite the fact that energy efficiency receives a lot of attention, it can be taken from the literature that a large number of available cost-efficient energy efficiency improvement measures are not implemented in European SMEs." It is, for example, due to various barriers, such as insufficient financial sources, information constrain, and less developed internal skills and knowledge. Therefore, Prashar (2017) argues that those fragments of energy-related research in SMEs are focused primarily on analyzing such barriers and triggers of energy efficiency. The author also adds that most energy optimization procedures within energy-intensive SMEs focus on the technological improvements at the operational level while there is a lack of strategic approaches.

2.3 | Stakeholder theory

Linking firms' environmental behaviors, including technical elements related to energy consumption and efficiency, to a more managerial perspective, we place proactive environmental strategies (PES) and energy consumption monitoring (ECM) approaches under the umbrella of stakeholder theory. This theory defines stakeholders as individuals, groups, or organizations that affect or can be impacted by companies' decisions and actions (Freeman, 2010; Mainardes et al., 2011). It is precisely the stakeholders who have the proven power to influence firms' environmental behaviors (Horbach et al., 2023). Therefore, it is necessary to harmonize the different stakeholders' interests to create mutual interests instead of primarily considering conflicting ones (Hörisch et al., 2020).



This paper builds on the stakeholder salience theory put forth by Mitchell et al. (1997). According to this theoretical framework, despite the organization's environmental dependence on diverse groups and individuals, managers are responsible for determining the salience of stakeholders and the corresponding level of attention they should receive at any given moment (Tawiah & Boolaky, 2019). However, managerial decisions concerning salient stakeholders are contingent upon the stakeholders' level of power, legitimacy, and urgency. Mitchell et al. (1997, p. 879) state that the significance of a specific stakeholder to the management of the firm “is low if only one attribute is present, moderate if two attributes are present, and high if all three attributes are present”. Managers adapt their actions accordingly, and these variations serve to moderate the impact of management characteristics, as suggested by Frederick (1995).

Existing research has already identified various stakeholder demands and interests that push firms to be greener (see, e.g., Horbach et al., 2023), and most prior studies have confirmed the importance of external stakeholders. Studies have confirmed the influence of customers, such as through the demand for environmentally friendly products, processes, and services (Sáez-Martínez et al., 2016; Yadav et al., 2018), as well as regulators as powerful stakeholders (Graafland, 2020). Firms operating under strict environmental regulations have a tendency to integrate environmental anxiety into their corporate strategies with higher probability than those that face more lenient environmental regulations (López-Gamero et al., 2010). Trianni et al. (2014) also confirm the key role suppliers (e.g., energy and technology suppliers) play in enhancing SMEs' energy efficiency.

In terms of internal stakeholders' effects on firms' greenness, current research identifies two main reasons why employee stakeholders play a crucial role in PES development (Aragón-Correa et al., 2013): their awareness of environmental problems (Delgado-Ceballos et al., 2012) and their ability to influence PES more directly than external stakeholders (Alt et al., 2015) because they are not only stakeholders, but also the human capital of the firm. The same applies to ECM, as Gerstlberger et al. (2016) confirm that these “superior intangible assets” of the firm can drive energy efficiency. Similarly, Prokop, Gerstlberger, et al. (2023) state that human capital (skills and experiences of employees and managers) plays a key role in EE. Moreover, Trianni et al. (2014) and Fresner et al. (2017) argue that the shortage of internal skills, staff, and professional knowledge related to EE issues could hamper SMEs' implementation of such measures and strategies. Therefore, it can be assumed that these arguments will be transferable to ECM as well.

In sum, we can say that employee engagement becomes imperative for the successful implementation of green practices due to environmental awareness (which often represents a barrier to environmental behaviors and EE; see Trianni et al., 2014), shared vision and values, and unique employee knowledge, which may enable employees to support firms' efforts to make environmental improvements (Alt et al., 2015). Indeed, numerous studies have investigated the importance of employees' engagement in the adoption of environmental practices (Darnall et al., 2008; Mishra & Yadav, 2021; Ramus & Steger, 2000) such as eco-friendly design, waste reduction programs,

environmental training, shared visions, and sustainability practices as important drivers for implementing proactive environmental behaviors (Alt et al., 2015; Pham et al., 2020; Sharma & Henriques, 2005). Studies have also confirmed that employees' training and engagement are essential for PES and ECM (Buysse & Verbeke, 2003; Trianni et al., 2014; Zhang et al., 2019) as the employees possess unique knowledge about their firms (Sarkis et al., 2010). Yet despite the confirmed importance of internal employees' engagement, we still know little about the influence of the intensity of these activities on firms' outputs (Prokop & Hajek, 2023), including in the form of environmental behaviors expressed by PES and ECM in this study.

2.4 | Emerging research gaps

Based on the research discussed thus far, attention has focused primarily on large and multinational corporations (Eweje, 2020; Kurapatskie & Darnall, 2013) while SMEs have received limited attention regarding their green practices. Two opposing views currently prevail in the literature dealing with the attitude of SMEs towards green behaviors. Hoogendoorn et al. (2015) report that, on the one hand, SMEs are afraid to engage in environmental practices and perceive this area as a burden and threat. Moreover, SMEs are not aware of all the benefits of their green behaviors and face several barriers, unlike large firms. On the other hand, the owner and the manager are often the same person in SMEs, resulting in control over the management of resources according to personal preferences and the possibility of involvement in environmental practices (depending on their personal values, for example; Horbach et al., 2023).

In terms of stakeholders' effects, Darnall et al. (2010) conclude that, although smaller firms introduce lesser green practices than large firms (Murillo-Luna et al., 2011), they could be more sensitive to stakeholder needs and demands due to the strong relevance of a good reputation to their success. However, fundamental questions, such as which stakeholders are relevant to SMEs and how SMEs engage with their stakeholders to create value, have hardly been explored (Schlierer et al., 2012). Therefore, finding the determinants of SMEs' green practices seems relevant and warranted.

Moreover, there is a need to focus on the engagement of internal stakeholders, which can present a key factor in companies' success; yet such research has been limited this far. More concretely, a research gap exists in the absence of clear, consistent results of the influence of the intensity of employee engagement in the form of meetings on firms' proactive environmental strategies and energy consumption monitoring. In addition, other tasks of framing firms' strategies to meet the requirements of various stakeholders have recently raised for top managers (Prokop, Hojnik, et al., 2023). As Nadeem et al. (2020) state, top management's characteristics (e.g., board gender diversity [BGD] and CEO gender) or firms' greenness (Horbach & Jacob, 2018) have not yet been fully explored and analyzed. Here, it seems important to focus on not only the engagement of internal stakeholders, but also gender diversity among owners and managers. Such diversity can bring several advantages because “women may

differ from men in several aspects and can therefore add new (different) perspectives, experiences, knowledge, values, working styles, and problem-solving ideas to firms” (Prokop, Hojnik, et al., 2023, p. 1).

When considering firms' ownership, family firms' impact on the environmental performance remains ambiguous, raising an important challenge for the theoretical development of several managerial theoretical lenses (Miroshnychenko et al., 2022). Research studies mainly identify the family in family firms as an additional stakeholder (Shabbir et al., 2020) and explore how this setting influences the management of the relationships with different stakeholder groups (Van Gils et al., 2014; Vazquez, 2018). Even in this context most research has built on the stakeholder salience framework (Mitchell et al., 1997), which seeks to explain what managers consider when weighing stakeholders' competing claims. The model, based on principal determinants of salience can determine the potential influence of stakeholders (whether positive or negative) on the business (Lähdesmäki et al., 2019) and implement strategies to meet their expectations (Thijssens et al., 2015). However, research on family ownership's influence on firms' environmental behaviors has yielded rather confusing findings so far, pointing to both positive effects (Horbach et al., 2023) and negative ones (Fan et al., 2021). We therefore see it as highly relevant to focus on the influence of family ownership in this study as well.

3 | RESEARCH QUESTIONS AND HYPOTHESIS DEVELOPMENT

3.1 | Unanswered role of internal stakeholders' engagement

Stakeholders' engagement in the form of meetings can express a certain form of corporate activeness to handle organizational issues (Majumder et al., 2017) as well as socialization efforts and the process of social capital creation (Prokop & Hajek, 2023). This engagement is seen as a vital part of firm life because it can (i) trigger the additional creation of skills and knowledge and (ii) help in finding compromises and key decisions (Aragón Amonarriz et al., 2019). Such activities are necessary, especially when talking about firms' environmental behavior and eco-innovation, which represent activities that require different and more specific knowledge and skills than firms' traditional processes, as Weigt-Rohrbeck and Linneberg (2019, p. 821) explain. These authors further state that employees' proactive behavior is a significant factor influencing firm performance and the same applies to employees' attempts at “*generating, championing, and realizing environmental initiatives,*” which are associated with barriers of the high complexity and resource constraints type. One would thus assume that employees' greater involvement in communication with managers could help prevent these barriers at least partially and, at the same time, help better inform managers about the demands and initiatives of these internal stakeholders. Moreover, Majumder et al. (2017, pp. 5–6) state that “*it is expected that CSR-related topics are discussed at each meeting of the board to protect the interests of the stakeholders*”

and that “*numerous board meetings enable giving more attention to socially related matters.*”

In contrast, Prokop and Hajek (2023, p. 748) state that, despite more frequent meetings being able to help share crucial and up-to-date information sprightly, these meetings can be perceived as a “*notorious waste of time*” based on the idea that “*each hour spent in a meeting means less time for real productive work.*” These authors further show that top management teams' internal meetings can negatively influence firms' performance, which they justify by the occurrence of the so-called decision paralysis hypothesis. This hypothesis is most often manifested by increased procrastination accompanying more frequent management meetings, where key goals and activities are not clearly defined and communication stalls, which can lead to various relationship conflicts (Harymawan et al., 2020). Meanwhile, Lagasio and Cucari (2019) provide inconclusive results regarding the effects of the number of board meetings on environmental, social, and governance (ESG) disclosures. In sum, to the best of our knowledge, the limited existing empirical research on the role of internal stakeholders' engagement in stimulating corporate environmental behaviors does not allow us to define a research hypothesis. Based on these arguments, we pose the research question as follows:

RQ1. *How does employees' engagement affect proactive environmental strategies (PES) and energy consumption monitoring (ECM) in SMEs? What type of meetings (more frequent daily or at smaller intervals) increases the chance of SMEs introducing PES and ECM the most?*

The role of environmental managers has not yet been well mapped, yet we know that the skills and experience of managerial staff play a large role in stimulating environmental behaviors (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023; Straub et al., 2023), which can be expected from specialized environmental managers (who could also have the potential to increase environmental awareness, which often represents a barrier for firms; Trianni et al., 2014). Thus, we ask the following question:

RQ2. *Does the presence of environmental managers increase the chance of SMEs introducing proactive environmental strategies (PES) and energy consumption monitoring (ECM)?*

3.2 | Family ownership

Blanco Hernández (2014) and Castejón and López (2016, p. 23) state that family businesses “*represent a commitment to their territorial community through continuity,*” that is reflected in higher investment, employment, and social responsibility. The empirical evidence of López-González et al.'s (2019) study confirms that family firms have a positive impact on social responsibility performance. Specifically, Berone et al. (2010) report better environmental performance for family firms in the US compared to non-family firms. Yet other studies have

concluded that private family firms are not more focused on environmental performance than private non-family firms (Dekker & Hasso, 2016). Likewise, in their recent study, Miroshnychenko et al. (2022) state that family businesses have worse environmental goals than non-family firms, although this effect is not large. These mixed findings confront current theoretical concepts expecting increased green behavior of family businesses. Despite these negative results in recent years, in line with findings of Horbach et al. (2023), we lean more toward positive expectations and hypothesize that:

H1a. Family ownership increases the chance of SMEs introducing proactive environmental strategies (PES).

H1b. Family ownership increases the chance of SMEs introducing energy consumption monitoring (ECM).

3.3 | Managers' and owners' gender diversity

Previous studies (Kumar & Paraskevas, 2018; Lagasio & Cucari, 2019; Nadeem et al., 2020) have shown that heterogeneity in top management significantly influences organizational behaviors and thus increases probability of producing better and more varied solutions. Heterogeneity, also known as top management team diversity, is defined as variation in the characteristics of team members (Hambrick et al., 1996), with gender being one of the most important measures (Catalyst., 2004). Recent research has found that the presence of females in top management has a positive impact on the firm's PES (Kumar & Paraskevas, 2018) and plays an important role in advocating for environmentally friendly initiatives (Brough et al., 2016). In the same vein, Ben-Amar et al. (2017) find that the presence of women in the top management promotes the adoption of sustainability initiatives, such as monitoring energy consumption. Similarly, the research on BGD confirms a positive effect on the implementation of CSR principles (Bear et al., 2010; Zhang et al., 2013), particularly higher levels of environmental CSR (Post et al., 2011). In summary, the presence of women in top management can bring benefits when it comes to pursuing PES and ECM (Kumar & Paraskevas, 2018). Therefore, we assume these positive effects in our research sample and hypothesize that:

H2a. Gender diversity of managers increases the chance of SMEs introducing proactive environmental strategies (PES).

H2b. Gender diversity of managers increases the chance of SMEs introducing energy consumption monitoring (ECM).

Firms' efforts to monitor energy consumption and reach energy efficiency represent specific fields of firms' innovation demanding resources like other forms of innovation, including, for example, firm-specific human resources (managerial knowledge, education, skills, or competences; Gerstlberger et al., 2016). In this case, owner gender

diversity is still an unexplored area, and only a few recent studies have connected these disciplines in empirical research (Audretsch et al., 2022; Batra et al., 2023; Prokop, Hojnik, et al., 2023). Moreover, it has been possible in recent years to monitor calls after linking personal characteristics and firms' greenness (Edziah et al., 2021; Horbach & Jacob, 2018). As far as we know, there is a missing link between owner gender diversity and firms' PES and ECM. A recent study by Bawakyllenuo and Agbelie (2021) outlines that female entrepreneurs tend to be more environmentally friendly than male entrepreneurs. Therefore, we hypothesize that:

H3a. Gender diversity of owners increases the chance of SMEs introducing proactive environmental strategies (PES).

H3b. Gender diversity of owners increases the chance of SMEs introducing energy consumption monitoring (ECM).

4 | MATERIALS, METHODS, AND THE CONTEXT

4.1 | Central and Eastern European (CEE) region context

The Central and Eastern European (CEE) region represents a part of Europe including 11 EU member states, which joined the EU from 2004 onwards and which are commonly classified as emerging innovation systems (Stojčić, 2021). In general, CEE countries contrast from their Western and Northern neighbors in several aspects, such as, less developed social capital and trust between cooperating partners, different innovation drivers, high dependency on the foreign capital and investment, lower perception of environmental issues and others. These countries are therefore, on the one hand, seen as countries with lower economic development (Brodny & Tutak, 2021), but, on the other hand, with high potential thanks to the ever-forming innovation policies and systems (Květoň & Horák, 2018).

CEE innovation regimes and systems were considered weak for many years as they were accompanied by a low demand for domestic technologies and, conversely, a high dependence on external sources of knowledge (Radošević, 2006). At the same time, CEE countries (i) have faced problems related to the decreasing efficiency of their innovation systems, especially in R&D, education, and vocational training systems, and (ii) were rather dependent on production than innovation capabilities in the past (Kravtsova & Radošević, 2012). As a result, CEE countries are currently characterized by low innovation and technology transfer intensity (Stojčić, 2021). Moreover, CEE innovation regimes are primarily driven by non-R&D activities (e.g., funding of machinery and equipment acquisition) and the knowledge used. In contrast, innovation regimes in Western economies are driven by R&D investment and knowledge creation (Vujanović et al., 2022).

Regarding environmental behavior and awareness—for a more comprehensive picture about the environmentalism within the CEE territory, please see Jehlička and Jacobsson (2021)—CEE countries (as part of the so-called Eastern bloc) have historically been perceived as countries in which firms, but also society, have lower perceptions of environmental problems (Horbach, 2016). Thus, they are seen as being more liable of natural contamination and pollution in Europe than more advanced Western European countries promoting industrial restructuring in a move toward energy efficiency and resource-saving (Tokunaga, 2016). Moreover, in the late 1990s, CEE states were characterized by efforts to minimize the influence of European environmental policy reforms on their economic growth and competitiveness, by a weak institutional base, and by a lack of “powerful domestic actors in environmental politics” (Jehlička & Tickle, 2004, p. 81). Meanwhile, CEE states currently often rely “on conventional energy sources, which are highly energy-consuming, and due to investment problems, a certain ‘lag’ can be noted in relation to the more developed EU countries” (Brodny & Tutak, 2021, p. 2). Compared to their richer and more advanced European neighbors, CEE countries’ environmental behavior and eco-innovation are more dependent on regulation and (eco) financial support today, and CEE firms (as with traditional innovations) rely on external R&D and “technology transfer from West to East” (Horbach, 2016, p. 1).

As the summary thus far demonstrates, the CEE region differs significantly from its wealthier European neighbors in many aspects. However, according to Jehlička and Jacobsson (2021), it is necessary to emphasize that the performance of the CEE region has often been based on and compared with Western (innovation) models, environmental behavior, and politics that understandably led to a worse evaluation of the CEE region. Scientists’ less interest in environmental topics was another limitation that led to a lower level of information and policy recommendations for public policy makers in this area (Prokop, Gerstlberger, et al., 2023).

In the context of these arguments, asking how employees’ engagement, family ownership, and gender diversity will affect SMEs’ green behaviors and whether these concepts, which have been confirmed in the West apply in the CEE region seems relevant. For these purposes, we select four CEE countries: the Czech Republic, Slovakia, Poland, and Estonia. In total, we analyze 2314 CEE SMEs (i.e., 435 Czech, 337 Estonian, 1148 Polish, and 394 Slovakian).

4.2 | Dependent (explained) variables

We created two models (for the model statistical description, please see Section 4.5), each operating with one dependent (explained) variable. Both explained variables are binary (1: yes, 0: otherwise).

Model 1: The firm’s strategic objectives related to environmental or climate change (question from the questionnaire: “In this fiscal year, did this firm have strategic objectives that mention environmental or climate change issues?”) were selected as the first dependent variable representing PES. The main reason is the shift in mindset from environmental management to environmental strategy because pro-environmental behaviors and competitiveness are becoming

increasingly interconnected (Hoffman, 2000). Moreover, companies that have more proactive environmental strategies show a higher dedication to “green enhancements” (Darnall et al., 2010).

Model 2: For the ECM variable, we selected the following question from the questionnaire: “Over the last three years, did this establishment monitor its energy consumption?” The main reason is that most of the analyzed countries had weak EE performance, even though it is a highly resonant topic in Europe, requiring additional analyses that would provide relevant information for policymakers (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023) as well as for other catching-up firms and their managers.

4.3 | Independent variables

Explanatory (independent) variables are shown in Table 1. Regarding family ownership, a family-owned business can be defined according to various criteria, but the most common way of defining family firms focuses on either firm governance or ownership of the firm (Andersson et al., 2018). Vazquez and Rocha (2018) identify family businesses based on family business definitions in three groups. First, the family firm presents majority ownership and participation of family members in the management of the company. Second, some authors define family firms in terms of the likelihood of a family member’s successor (Gagnè et al., 2011). In this sense, Bakoglu and Yildirim (2016) state that family businesses are those businesses where ownership and/or governance is passed on from one generation to the next one, which may be considered a higher order of a family business (Dobson & Swift, 2008). With these definitions, the presence of two or more family shareholders also appears (Belenzon et al., 2016). Finally, some authors use a broader definition of family firms, such as members of a family owning or controlling at least 5% of the voting stock (mainly publicly traded American family firms; Berrone et al., 2010) or as a firm in which the family has 25% of decision-making rights (Leitertorf & Rau, 2014).

For the purposes of our research, we build on the definition provided by the European Commission (2009), which states that a family firm is a firm in which an individual or family possesses most of the decision-making rights (or, in the case of listed firms, 25% of the decision-making rights) and where at least one representative of the family is formally involved in the governance of the firm. This definition was chosen because it is based on an analysis of family businesses in the European environment, which best corresponds to the purposes of our research. For the analyzed firm to meet the definition of a family firm in our research, this firm must be 25% owned by one family and at the same time have at least 10% of the key management positions occupied by members of this family.

For gender diversity, we selected two variables that we expect to have a positive effect within our models: gender diversity of top managers (Nadeem et al., 2020) and gender diversity of owners (Bawakyilenuo & Agbelie, 2021). Considering the effects of internal stakeholders, we test the effects of the frequency of meetings of top managers with employees involved in production activities as an opportunity to speed up and make these processes more efficient

**TABLE 1** Independent variables.

	Variable	Description
Ownership structure	Family firm	“What percentage of the firm is owned by the same family?” (Criterion: at least 25%) + “What percentage of the key management positions of this firm are occupied by members of this family?” (Criterion: at least 10%)
	Gender diversity	Female top manager Female owner
Internal stakeholders	Employee engagement	“In a typical week, how often does the top manager meet with employees involved in production activities?”
	Environmental manager	“In the fiscal year, did this establishment have a manager responsible for environmental and climate change issues?”
External pressure	Customers' requirements	“In the fiscal year, did any of the establishment's customers require environmental certifications or adherence to certain environmental standards as a condition to do business with this establishment?”
	Government pressure—energy tax or levy	Energy tax or levy: “Was this establishment subject to an energy tax or levy?”
	Government pressure—energy standard	Energy standard: “Was this establishment subject to an energy performance standard in its operations?”

Note: All explanatory variables (except employee engagement) are binary: 1 = yes; 0 = otherwise. Employee engagement is divided into four categories: never, once a week, 2 to 4 times a week, or daily.

Source: Adapted from the World Bank Enterprise Survey 2019.

(Prokop & Hajek, 2023) as well as the presence of an environmental manager as the bearer of knowledge and experience needed for the success of these processes (Straub et al., 2023). Next, as the importance of external stakeholders as triggers of firms' greenness has also been confirmed in previous research, based on the data availability, we test the influence of both customers (Yadav et al., 2018) and policymakers (Horbach et al., 2023).

4.4 | Control variables

We also used several control variables for our analyses. As we used an aggregated dataset working with all states together in our analyses,

we verified our results for individual countries as well. Second, we controlled for sector effects, including manufacturing, retail, and other services. Next, referring to recent works analyzing the connection among EE and innovativeness, Gerstlberger et al. (2016) state that EE and firms' innovations form the same management jigsaw and firms that invest in innovations are more inclined towards EE technologies. Therefore, applying the logic that innovators also tend to be greener, we control our models for firm adoption of product and process innovations in the last three years. Finally, referring to Wu et al. (2020), who confirm positive effects of a firm's R&D expenditures on its environmental behaviors, we also consider the influence of internal and external R&D expenditures in the last three years. Variables expressing firms' innovations and R&D are binary, where 1 indicates yes.

4.5 | Data source and method

To cover all above topics and to test our arguments, we see the use of the recent version of the firm-level based Enterprise Survey 2019 dataset and its green economy module as appropriate. This data covers a wide range of business activities (also those connected with eco-innovations and environmental behavior) and are provided by the World Bank. Since our estimated models include explained (output) variables that are dichotomous (binary), we are applying a binary logistic regression which is commonly used for such type of analyses (e. g., Prokop, Hojnik, et al., 2023). For more details regarding the general use of the binary logistic model, please see Hosmer and Lemeshow (2000).

5 | EXPERIMENTAL RESULTS

This section presents the results of our models. Variable selection (elimination) methods are not used in our models in order to obtain a broader view of the investigated effects of regressors (explanatory variables). Despite the unconfirmed influence of some regressors at the significance level, all explanatory variables are included in models. In contrast, we used this elimination method for control variables; therefore, the presented tables do not include those control variables that are not significant independently or in interaction.

5.1 | Model 1: Proactive environmental strategies (PES) as a dependent variable

The results presented in Table 2 show that, considering single effects of selected variables, ownership structures and gender diversity do not influence PES significantly in our sample of CEE countries. However, interestingly, we find significant interactions between the variables we examined. First, the interplay among female top managers and engagement can lead to significant effects, thereby increasing the chance of SMEs introducing PES. More concretely, a firm employs a female top manager, the different frequency of top managers' meetings with employees involved in production activities affects PES with

TABLE 2 Binary logistic regression (dependent—proactive environmental strategies).

Variable	Level	Estimate	OR	Pr(> z)	Sign. Code
(Intercept)		-3.112325101	0.044497374	8.58E-34	***
Ownership					
Fam. Firm (H1a)	1	0.022601479	1.022858827	0.890437324	
Gender diversity					
Female top man. (H2a)	1	-0.023685087	0.976593203	0.906723612	
Female owner (H3a)	1	0.055988477	1.057585497	0.719471519	
Internal stakeholders					
Employee engagement (ref. never)	1×	-0.148937474	0.861622987	0.579767063	
	2-4×	-0.033418235	0.967133985	0.910738384	
	daily	0.258985088	1.295614485	0.270550072	
Environmental man.	1	2.893968629	18.06486025	4.28E-37	***
External pressure					
Cust. Requirements	1	0.839605354	2.315453012	9.46E-07	***
Energy tax or levy	1	0.345490804	1.4126831	0.100922401	
Energy performance	1	0.795446443	2.215429838	0.0009811	***
Control variables					
Country (ref. EST)	CZE	0.499831562	1.648443587	0.041354782	*
	POL	0.403311495	1.496773057	0.082292062	+
	SVK	1.297186312	3.658986924	1.17E-07	***
Internal R&D	1	0.671750529	1.957661266	0.000107401	***
Product innov.	1	0.28513113	1.329936412	0.054711402	+
Interaction effects					
Female top man*	1×	1.637292422	5.141230368	0.002551592	**
Engagement	2-4×	1.139212144	3.124305891	0.042428633	*
	daily	0.738265779	2.092303848	0.148004049	
Fam. firm * Environmental man.		-0.519836987	0.59461747	0.08471352	+

Note: Signif. Codes: *** *p*-value less than 0.001, **: 0.01, * 0.05; +:0.1.

different significance. We can basically state that top management meeting with the employees generally increases the chances of PES compared to companies where these meetings do not take place. Moreover, these meetings have the highest effects on PES if they take place 1 time per week (the chances of PES increase 4.4 times). Meanwhile, daily meetings show the lowest increase in PES odds ratios (although there is still a 2.7 times increase in PES odds ratios).

Next, we find a significant interaction between family ownership and managers responsible for environmental and climate change issues. Interestingly, we show that these managers are crucial for family firms striving for PES. A family firm that has an environmental manager has a 10 times greater chance of PES than a family firm that does not have such a managerial position.

Considering other single effects of selected stakeholders, we empirically demonstrate that it is possible to identify variables that significantly increase the chance of determining PES in each stakeholder group. These variables are: customers' requirements (2.3 times); energy performance standards (2.2 times; according to the resulting model, energy tax or levy represents a variable whose presence in the model also increases the chance of PES, although these

effects are not statistically significant); and manager responsible for environmental and climate change issues (18 times).

Regarding our control variables, we find significant differences among countries in terms of the chances of introducing PES. Slovakia shows the highest ratio of chances for the introduction of PES, which is 3.6 times higher than in Estonia and 2.2 times higher than in the Czech Republic and Poland. The lowest values are in Estonia, while in the Czech Republic and Poland the ratios of these chances are without significant differences. Product innovations and internal R&D also trigger firms' PES.

5.2 | Model 2: Energy consumption monitoring (ECM) as a dependent variable

Considering single effects (see Table 3), family ownership does not influence firms' PES. The same applies to BGD. However, we find that female ownership slightly increases chances of ECM in our sample of firms within CEE countries. Furthermore, if top managers meet with employees involved in production activities at least once a week, the

**TABLE 3** Binary logistic regression (dependent—energy consumption monitoring).

Variable	Level	Estimate	OR	Pr(> z)	Sign. code	
(Intercept)	1	0.037697216	1.0384168	0.851812679		
Ownership						
Fam. Firm (H1b)	1	-0.042631162	0.9582648	0.733532349		
Gender diversity						
Female top man. (H2b)	1	-0.076635712	0.9262272	0.574929834		
Female owner (H3b)	1	0.206587434	1.2294752	0.096301487	+	
Internal stakeholders						
Employee engagement (ref. never)	1×	0.116936635	1.1240482	0.610921308		
	2-4×	-0.202094333	0.8170179	0.470394085		
	daily	1.199685116	3.3190716	3.61E-05	***	
Environmental man.	1	1.030915905	2.8036325	3.78E-09	***	
External pressure						
Cust. requirements	1	0.501506582	1.6512071	0.005504246	**	
Energy tax or levy	1	0.214425811	1.2391502	0.424901434		
Energy performance	1	1.020843228	2.7755342	2.26E-05	***	
Control variables						
Country (ref. POL)	CZE	2.18519	8.8923379	2.00E-16	***	
	EST	1.06666	2.9056584	1.04E-09	***	
	SVK	0.41908	1.520562	0.00384	**	
Sector (ref. manuf)	Retail	-0.398335066	0.671437	0.00848575	**	
	Other	-0.503854499	0.6041973	3.89E-05	***	
Product innov.	1	0.635032905	1.8870842	1.55E-07	***	
Process innov.	1	0.556729686	1.7449566	0.00101558	**	
External R&D	1	0.785199548	2.1928445	0.002285576	**	
Interaction effects						
Fam. firm *		0.880664626	2.4125026	0.008193755	**	
Energy tax or levy						
	Fam. firm * Engagement	1×	0.282494579	1.3264346	0.479307719	
		2-4×	1.247230353	3.4806893	0.009014124	**
	daily	-0.648716006	0.5227165	0.148006718		

Note: Signif. Codes: *** p -value less than 0.001, **: 0.01, * 0.05; +:0.1.

chance of ECM increases (it is interesting that the most frequented meetings are the most significant). Given the interactions' effects, we find two significant interactions. The first is the interaction between family ownership and energy tax or levy. An energy tax or levy increases ECM of family firms 3 times, compared to family firms that are not subject to an energy tax or levy. The second is the interaction between family ownership and employees' engagement. The highest chance ratio for ECM occurs when there are 2-4 meetings per week in family firms (increases 2.8 times). In this case, compared to non-family firms, employee engagement is more significant at a lower frequency of meetings.

From the perspective of different stakeholders' groups, customers' requirements (by 1.65 times), energy performance standards (by 2.78 times), and managers responsible for environmental and climate change issues (by 2.8 times) increase chances of ECM.

The differences between the examined CEE states are again significant. Our model shows that the highest odds ratios for ECM implementation are in the Czech Republic, being 9 times higher than in Poland, 6 times higher than in Slovakia, and 3 times higher than in Estonia. Poland achieved the lowest results among these countries. The manufacturing sector shows the highest chances for ECM within the sectoral comparison. Finally, we confirm positive effects of firms' innovation, both product and process, and external R&D on ECM.

6 | DISCUSSION AND HYPOTHESIS DECISION

First, looking at the role of internal stakeholders' engagement (in connection with our research questions), the results indicate the

high significance of having an environmental manager in the determination of proactive environmental strategies (PES) and energy consumption monitoring (ECM) in SMEs—surprisingly, even in family firms in the CEE region. This finding supports the claim of several previous research studies carried out outside the CEE territory, demonstrating that professionalization in the context of environmental management is the driver of institutional transformation (Gluch & Månsson, 2021). For example, Dahlmann and Grosvold (2018) used semi-structured interviews with environmental managers from UK-based companies to find that contemporary environmental managers must redefine their professional roles' institutional arrangement from exclusively bearing environmental practice to engaging broadly in environmental sustainability across organizations. Doing so will enable them to implement environmentally responsible business practices.

In terms of the meetings factor, the results reveal that employees' engagement in the form of meetings does not significantly affect PES alone, but in interaction with female top managers (also presented as BGD). This important finding promotes the role of female top managers in advocating for environmentally friendly strategies (Brough et al., 2016). Despite these facts, we can only partially accept our hypothesis H2a because we did not find significant single effects of this variable. However, an even more interesting result is that it is necessary to monitor the frequency of these meetings with respect to information overload, which can lead to employees' demotivation and insufficient work performance (Rabenu et al., 2017). For instance, Majumder et al. (2017) suggest that multiple board meetings allow companies to pay more attention to social issues. In addition, board gender diversity (BGD) is essential to make board meetings more effective in implementing PES. Our finding on the importance of BGD for firms' environmental behaviors is consistent with the findings of Horbach et al. (2023). Yet too frequent engagement does not contribute to the support of PES, as demonstrated by our results. On the contrary, such activity is more in line with the findings of Prokop and Hajek (2023) and gives larger credit to the claim of being a notorious waste of time.

When considering family ownership and employees' engagement, we show that, if top managers of family businesses meet with employees involved in production activities at least once a week, the chance of ECM increases. The optimal frequency of meetings is 2 to 4 times a week (i.e., more often than in the case of PES). One reason could be that leaders of family-owned firms, in addition to others, can trigger firms' innovation by communicating the strategy for innovation and engaging their employees to innovate (Villaluz & Hechanova, 2019). According to Boyd (2010), giving attention to employees and offering familiar communication create a space for family firms' engagement in environmental strategies also for Western European firms (for example, German family firms).

Within the context of the ownership structure (hypotheses H1a-b), our findings contradict previous studies assuming that family ownership is crucial in a firm's adoption of PES or ECM (Castejón & López, 2016; Dou et al., 2019). These studies usually adopt a socioemotional wealth (SEW) theory lens to explain why the family firms are willing to implement environmental strategies and innovation (Campopiano & De Massis, 2015; Sharma & Sharma, 2011). The findings

indicate that SEW aspects do not play a key role in proactive environmental behaviors of family firms in CEE countries due to their development in specific historical circumstances. More precisely, within CEE countries, first-generation family firms controlled by an aging founder are still predominate (Dana & Ramadani, 2015). These findings lead us to reject hypotheses H1a and H1b, but they open the door for future research on this issue within the CEE region, as recommended in the next section.

Although previous research has suggested that the involvement of female owners or top managers can positively influence the adoption of PES or environmental initiatives (Ben-Amar et al., 2017; Kumar & Paraskevas, 2018), our study fails to support these hypotheses. Therefore, we also reject hypothesis H3a. As previously mentioned, the results suggest that gender diversity affects decisions related to pro-environmental behaviors only with the interaction of employee engagement. The explanation may be women's different leadership style, which is more focused on inspiring others, building relationships, promoting cooperation, and encouraging teamwork (Harrison et al., 2015; Zenger & Folkman, 2012). Prokop, Hojnik, et al. (2023) provide another possible explanation in the context of CEE countries. These countries currently face historical consequences (lower innovation performance, or lower environmental perceptions), which can become barriers for decision-making and team performance and efficiency. This can ultimately negatively influence firms' capacity to make strategic changes related to their environmental initiatives.

The weak green perception of residents of CEE countries compared to the European average (Horbach, 2016) may explain why gender does not affect the acceptance of PES or ECM in our study. In addition, women in CEE economies have historically encountered challenges when seeking to gain empowerment (Gawel et al., 2023). According to Hofstede et al.'s (2010) Masculinity Index (MI), which divides CEE countries into three groups (highest masculine culture, middle masculine culture, and lowest masculine culture), the Czech Republic, Poland, and Slovakia are among the highest MI scorers. Another factor to consider is the inadequate representation of women in powerful positions, which can be understood from a managerial perspective as the absence of women in management roles. From a managerial perspective, power, and wealth rest predominantly with CEOs and corporate board members, with the representation of women in directorships not achieving parity with that of men (Lewellyn & Muller-Kahle, 2020).

Regarding gender diversity and ECM, our findings confirm the significance of female owners in triggering ECM within SMEs. Therefore, we accept hypothesis H3b. Interestingly, these results refute the general historical awareness that “*the energy sector and related companies have been primarily male dominated, bearing the remains of low or no gender equality efforts within decision-making processes*” (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023, p. 9). However, consistent with Prokop, Gerstlberger, et al. (2023), we did not confirm the effects of BGD and, therefore, our results go against many studies confirming the importance of BGD for firms' greenness (see Horbach et al., 2023; Kumar & Paraskevas, 2018; Nadeem et al., 2020). Thus, we reject hypothesis H2b.



Focusing on other determinants of firms' green behaviors, our empirical results correspond with the findings of existing studies revealing a significant influence of customer requirements (Sáez-Martínez et al., 2016; Yadav et al., 2018) and energy performance standards (Seroka-Stolka & Fijorek, 2020) on the adoption of PES and ECM. For SMEs, this may not only mean responding to rapidly changing customer demands for sustainable products and processes, but also becoming a respected business partner through more environmentally sensitive behaviors. Moreover, due to a simplified decision-making process and greater flexibility, SMEs are more willing to adopt standards and follow rules, which should protect them from noncompliance sanctions and public criticism (Fan et al., 2021). In the family firm context, the results show that ECM adoption is driven by regulatory pressure in the form of an environmental tax or levy. This finding indicates that family firms functioning under stricter environmental regulations have a higher tendency to adopt environmental initiatives than others (López-Gamero et al., 2010).

7 | CONCLUSIONS

This paper examines the role of traditional and generally accepted concepts (stakeholders' engagement, family ownership, and gender diversity) in stimulating green behaviors of SMEs in CEE countries. These countries have so far lagged behind their western and northern neighbors in the perception of the need for ecological behaviors and therefore are generally considered as catching-up countries (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023). The efforts of this study produce several theoretical and practical contributions, as presented below.

7.1 | Theoretical contributions

We expand the current state of knowledge within stakeholder theory and focus more on the role of internal stakeholders in stimulating firms' proactive environmental strategies and energy consumption monitoring. We have shown that employee engagement and the involvement of environmental managers can play a significant role in firms. Moreover, we connect the typically hard technical discipline related to energy efficiency (EE) with the soft managerial discipline related to PES. We also contribute to the current state of knowledge about SMEs' green behaviors, where research on the role of PES within SMEs is absent or overlooked (Minciullo & Pedrini, 2018) and EE potential has remained largely untapped while energy management practices suffer due to several barriers (Prashar, 2017).

We also contribute to the recent research of family firms and reveals the role of gender diversity, which has been an interesting topic in recent years within the framework of research on family firms' green behaviors (Rovelli et al., 2022). In general, it can be said that the topic of board and owner gender diversity in stimulating firms' environmental behaviors is gaining importance nowadays (Audretsch et al., 2022; Nadeem et al., 2020). We therefore carry out this research within the

CEE region and show that some generally accepted truths may not always apply, especially in states that had to deal with severe environmental impacts caused by the communist regime's environmental negligence (Opršal & Harmáček, 2019). Finally, as part of our theoretical analysis, we also provide an overview of current research gaps that warrant additional attention and research.

7.2 | Practical implications

In terms of managerial implications, our findings suggest the crucial role of internal stakeholders' engagement in promoting proactive environmental strategies and energy consumption monitoring in SMEs and family firms. Top management can express environmental commitment through environmental managers and effective meetings with employees, which can ultimately result in the creation of PES and ECM. However, for these meetings to be successful, it is necessary to focus on their intensity. Our results suggest that more technical issues require fewer meetings than meetings on strategic tasks. Therefore, it is necessary to monitor the frequency of meetings (employee engagement) with respect to information overload, which can lead to employees' demotivation and insufficient work performance.

If environmental responsibility is a priority for a firm, it should hire managers who act as green champions and who involve stakeholders in company processes that support environmental values and behaviors (Dragomir, 2020). As a result, the cultivation of a culture of learning and knowledge-sharing will be created, which can be the main driving force of organizational change toward greater environmental responsibility. The importance of the creation and dissemination of knowledge in stimulating the environmental behavior of SMEs in CEE countries is also confirmed by Belas et al. (2021). Moreover, in this regard, it is necessary to focus on professionalization in the context of environmental management and on better involvement of women in these processes. Additionally, SMEs should carry out their CSR and green activities with good intentions and striving for the best possible result, because SMEs that only halfheartedly implement such practices can be more vulnerable to public criticism than SMEs that do not engage such activities at all (Graafland, 2018).

In family firms, especially among owners, gender diversity can have positive effects on green behaviors. Within other CEE SMEs, the topic of gender diversity is still more of a challenge for the future. In addition, as environmental managers prove to be important stakeholders, we highly recommend not only hiring them and promoting their gender diversity, but also increasing the skills of current employees (Prokop, Gerstlberger, et al., 2023; Prokop, Hojnik, et al., 2023; Straub et al., 2023), such as through training or internships abroad or by adopting external consultants (Fresner et al., 2017). Such practices are, moreover, generally accepted as practices increasing performance of SMEs (Patton et al., 2000).

In terms of recommendations for managers and policymakers, we see it as essential that they contribute to the rise in environmental sensitivity in firms and in society in general (Shrouf & Miragliotta, 2015) for several reasons. For example, SMEs might not be conscious of their energy-related costs and, therefore, "are not using

state of the art sensors and meters to monitor and control their energy consumption” (Fresner et al., 2017, p. 1651). There is also a need to point out all direct and indirect benefits of firms' green behaviors, such as by adopting energy-efficient technologies or conducting energy audits (Fresner et al., 2017). These activities have proved to be key in overcoming one of the main barriers of companies, which is precisely the low awareness and low understanding of the need for environmental behaviors.

For policymakers, Trianni et al. (2014, p. 1252) state that “information about technology, regulations and opportunities for financing are perceived as complicated, fragmented or not trustworthy, especially those coming from government and financial institutions.” Therefore, simplifying administrative processes and increasing the awareness of firms are necessary. Based on our findings, it is also necessary to set regulatory policies in such a way that they better reflect the differences between firms (e.g., family, and non-family firms).

7.3 | Limitations and challenges for future research

This is not to say that the study is not limited. We consider the most notable limitation to be that we work with secondary data, where the questions are predefined. This limits us, for example, in the application of more advanced statistical methods (e.g., PLS-SEM). Therefore, future research should validate our results using new data. A mixed-method approach is also recommended, such as conducting controlled interviews with firm owners and managers. Moreover, future research should focus on how to effectively involve internal stakeholders in the creation and implementation of environmental strategies and initiatives and should identify what leadership style and corporate culture would support environmentally responsible behaviors. Considering family ownership, future research could focus on other topics that have not yet been explored, thereby creating important avenues for future research, such as family owners' emotions (Christofi et al., 2023) or the involvement of non-family owners and/or managers (Rovelli et al., 2022). Finally, it is necessary to examine the response of firms to new (crisis) challenges such as the COVID-19 pandemic, the energy crisis (Karman et al., 2024), or the war in Ukraine. It is a question whether such situations will start to displace firms' environmental behaviors.

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ORCID

Viktor Prokop  <https://orcid.org/0000-0001-6313-395X>

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