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DO GLOBAL FIRMS INCREASE THEIR ENVIRONMENTAL DISCLOSURE AND PERFORMANCE? THE MODERATING ROLE OF LIABILITY OF ORIGIN AND LEGITIMATION IMPLICATIONS

Abstract:

This paper analyzes the debate regarding the implications of international firms' strategies for their environmental approaches across multiple regions by distinguishing between symbolic and effective environmental operations. Furthermore, we extend previous literature by considering the relevant moderating role of a firm's liability of origin on these relationships. Using panel data of 292 firms in the period from 2011 to 2018 in the energy and utility sectors, our results show that a firm's progressive globalization increases its environmental disclosure but does not affect its environmental performance. Interestingly, our results demonstrate that a weak institutional home context reinforces a global firm's interest in gaining legitimation through both its environmental disclosure and performance; however, a strong institutional home context reduces its interest in environmental sources of legitimation. Our results contribute to previous literature on how global firms may gain environmental legitimacy using diverse strategies.

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Key words:

Firm's internationalization, environmental performance, environmental disclosure, legitimation.

1 INTRODUCTION

Global firms have exponentially gained importance in the last decade as a consequence of improved communications increasing their opportunities to access multiple international regions simultaneously (Cadestin, Backer, Desnoyers-James, Miroudot, Ye & Rigo, 2018). However, the liability of foreignness – referring to the disadvantages borne in the host country by international firms as a consequence of operating outside of their institutional context – is one of the most important challenges that firms operating in different regions face (Czinkota, Kaufmann & Basile, 2014; Hitt, 2016; Ramachandran & Pant, 2010). The institutional literature has highlighted how the long-term survival of international firms requires that they gain legitimacy from local agents (Kostova & Zaheer, 1999; Scherer, Palazzo, & Seidl, 2013). Responding to institutional concerns regarding the natural environment has been deemed an effective way of increasing a firm's legitimation in an international context (Bansal & Roth, 2000; Babiak & Trendafilova, 2011), hence the debate pertains to how international firms act to ameliorate their environmental legitimacy. Whereas early literature on environmental issues highlighted how international firms reinforce their environmental operations (e.g., Christmann, 2004; Delmas & Montes-Sancho, 2011), more recent research has highlighted the risks of a purely pragmatic environmental legitimation (e.g., Aragon-Correa, Marcus, & Hurtado-Torres, 2016; Lyon & Maxwell, 2011). This paper seeks to clarify this debate by examining the different effects of a firm's interregional internationalization on environmental disclosure and performance respectively, and analyzing the moderating role of a firm's home country on these relationships.

The doubts regarding the consequences of a firm's internationalization process are particularly relevant when the host country and home country present a higher institutional distance, in political, legal or sociocultural terms. In general, countries in the same region are relatively similar to each other (for instance, two countries in Africa are usually more similar than one country in Africa and another in Europe), and the liability of foreignness increases when a firm's internationalization is focused beyond its international home region (Asmussen, 2009; Asmussen & Goerzen, 2013; Rugman & Oh, 2013; Rugman & Verbeke, 2004, 2008). In this paper, an international firm's global strategy is defined as the process by which a firm extends its international operations beyond its home region (interregional internationalization). We propose that a firm's global strategy generates different approaches to signaling environmental interest by using a symbolic support (i.e., environmental disclosure), and it seeks a real reduction in impact through the use of internal practices (i.e., environmental performance).

Recent studies have suggested that international firms voluntarily disclose non-financial information (such as environmental information) in order to improve external perceptions of their transparency and to ensure their legitimacy in a global context (e.g., Aragón-Correa et al., 2016; Hassan & Ibrahim, 2012; Kolk & Fortanier, 2013). A recent descriptive analysis of the top 100 companies by market capitalization listed on The National Stock Exchange of India (NSE) concluded that "transparency in disclosure on non-financial parameters has been a proven tool which attracts more investors' attention and brings the businesses closer to the growing expectations of the stakeholders" (KPMG, 2019, p. 9). Therefore, we propose that a firm's global internationalization will engender

greater interest in environmental disclosure in order to obtain additional legitimation from society and reduce some of the liabilities of foreignness.

The literature has also highlighted a growing degree of skepticism regarding international firms' real progress in environmental performance. Although some studies have demonstrated that superior environmental performance can provide the legitimacy required to overcome the liability of foreignness (e.g., Babiak & Trendafilova, 2011; Bansal & Clelland, 2004; Christmann, 2004), recent empirical findings suggest that whether intentionally or not, international firms find means of attenuating opportunities for any effective external control of their operations, and operate in contexts with limited monitoring (Aragón-Correa et al., 2016). We propose that a global firm operating in multiple regions will progressively reduce its global environmental performance.

Moreover, we propose in this paper that liabilities of origin play a relevant moderating role regarding the relationship between a firm's global internationalization and environmental approaches. While any firm operating in the international market faces disadvantages due to the liability of foreignness, firms from developing and emerging markets bear the additional disadvantage of liabilities of origin (Ramachandran & Pant, 2010). This implies negative perceptions in the host countries as to these firms' willingness to conduct legitimate business (due to the limited institutional credibility of their home countries), as well as the importance of further corporate efforts to become legitimized when operating globally (Fiaschi, Giuliani, & Nieri, 2017; Marano, Tashman, & Kostova, 2017; Tashman, Marano, & Kostova, 2019). We propose that whereas a weak institutional home context reinforces a global firm's interest in reinforcing its legitimacy

by increasing both its environmental disclosure and performance, a strong institutional home context reduces its interest in such sources of legitimation.

In this study we contribute to the institutional literature by offering a novel approach that will clarify the debate regarding the implications of international firms' strategies through multiple regions on their environmental approaches. We do so by distinguishing between the different implications of a firm's globalization on its symbolic and effective environmental operations and considering the relevant moderating role of a firm's liability of origin on these relationships. Moreover, whereas most previous literature has analyzed the environmental implications of internationalization based on firms from developed countries (e.g., Aragon-Correa et al., 2016; Babiak & Trendafilova, 2011; Christmann, 2004; Delmas & Montes-Sancho, 2011), and more recently the corporate social responsibility of firms from emerging countries (e.g., Fiaschi et al., 2017 Marano et al.,, 2017; Tashman et al., 2019), this paper offers a unique analysis of firms from multiple home countries operating at different levels of globalization. Our results build upon previous literature concerning how global firms can gain environmental legitimacy by using diverse strategies.

The paper begins with a theoretical background alongside our hypotheses regarding both the effects of a firm's globalization on environmental disclosure and performance and the relevant role of liabilities of origin. Having discussed the methodology, we present the results supporting our hypotheses. We conclude the paper with a discussion and suggestions for future research.

2 THEORETICAL BACKGROUND AND HYPOTHESES

2.1 Interregional internationalization and environmental approach

Firms expanding internationally face the challenge of maintaining and increasing their legitimacy in multiple institutional environments across the diverse countries and regions in which they operate (Kostova & Zaheer, 1999). Higher levels of internationalization increase the range of stakeholders involved, in turn reinforcing the risks of them engaging in adverse institutional attribution when assessing the firms (Kostova & Zaheer, 1999; Marano et al., 2017). Moreover, internationalization through different regions increases firms' exposure to global norms and legitimizing actors (Marano & Tashman, 2012), such as multilateral or international non-governmental organizations (NGOs) (Marano & Kostova, 2015). Therefore, international firms encounter very relevant, diverse, and strong interest groups in both their home and host countries, which have the power to grant them legitimacy (Kang, 2013). Importantly, the pressures presented by the home and host countries can in cases be divergent or inconsistent (Kostova, Roth, & Dacin, 2008; Meyer, Mudambi, & Narula, 2011).

The literature has highlighted how the difficulties encountered in managing international pressure increase with the degree of institutional distance between the diverse countries or regions in which a firm operates (Van Hoorn & Maselad, 2016; Xu & Shenkar, 2002). Operating outside of its home region escalates a firm's institutional distance from its home country, reduces information transfer, and increases information asymmetries, thereby increasing the liabilities of foreignness (Asmussen, 2009; Asmussen & Goerzen, 2013; Rugman & Oh, 2013; Rugman & Verbeke, 2004, 2008). Legitimacy problems in one country may spill over to other contexts when firms are more visible to larger and

widely dispersed stakeholders (Sharfman et al., 2004). Environmental approaches are accepted corporate tools to influence a global firm's legitimation.

Although disclosing information has some risks, including legal liability and exposure to potentially angry activists and stakeholders (Lyon & Maxwell, 2011), recent literature suggests that international firms have started to voluntarily disclose environmental information in order to ensure their legitimacy (Aragón-Correa et al., 2016; Delgado, Pedauga, & Cordón, 2017; Hassan & Ibrahim, 2012; Kolk & Fortanier, 2013). In a study conducted on UK firms in the FTSE 100, Hassan and Ibrahim (2012) highlighted how disclosing environmental information enhances an international firm's reputation and legitimacy with stakeholders. Their findings show that receiving environmental awards is positively related to disclosure (but not to performance). Furthermore, Kolk and Fortanier (2013) examined a sample from the Fortune Global 250 and found the existence of a statistically significant positive relationship between the level of internationalization and environmental disclosure for firms in high-sensitivity sectors from high-standard countries. In contrast, in low-sensitivity sectors the authors found a negative relationship between internationalization and environmental disclosure. Aragón-Correa, Marcus, and Hurtado-Torres (2016) showed that the top international firms have a much better record of environmental disclosure than average firms within the same industries. Finally, Delgado, Pedauga, and Cordón (2017) noted that more visible firms with a prominent position in international markets disclose more environmental information and make clear efforts at achieving environmental transparency.

To summarize, even though environmental disclosure requires some effort from firms, it tends to be an area of focus for international firms. We propose that the greater the degree of a firm's globalization (interregional internationalization), the greater its incentive to

increase its legitimacy via environmental disclosure. A higher liability of foreignness and exposure to a wider range of stakeholders, global norms and global legitimizing actors will reinforce a global firm's external interest in monitoring its environmental impacts. Increasing its voluntary environmental disclosure may prove a visible, easy, and effective way to manage and maintain an international firm's legitimacy in host countries that are more institutionally distant, and can help avoid any negative spillover to one country as a consequence of legitimacy problems in another. Thus, we propose:

H1a: A firm's higher level of interregional internationalization is positively related to its environmental disclosure.

The literature on international business has yielded very mixed results regarding the relationship between a firm's internationalization and its environmental performance. Numerous studies have shown that firms operating in foreign markets may exhibit a refined environmental performance. These studies provide empirical evidence from a variety of industry and geographic contexts, such as Belgian chemical, food and textile sectors (Buysse & Verbeke, 2003), Chinese multinationals from various industries (Christmann & Taylor, 2001), and the US manufacturing sector (Kennelly & Lewis, 2002). These works argue that international firms have internal incentives to maintain similar environmental standards across different countries and improve operational efficiencies (Christmann & Taylor, 2001), as well as external incentives to mitigate litigation risks through accidentally breaking the law (Sharfman, Sharf & Tihanyi, 2004). However, a growing body of research shows that searching for locations where lax requirements permit companies to operate as they desire – especially where it may reduce their operating costs – is also a relevant force for internationalization (Aigbedo, 2019). Aragón-Correa et al. (2016) found that top international firms across different sectors

exhibited inferior environmental performance than other, less international firms in their respective industries. Similarly, in their study on publicly traded US firms from various sectors, Strike, Gao, and Bansal (2006) noted that international firms can simultaneously act responsibly and irresponsibly depending on their preferences and the benefits they may derive.

Our interest in global firms encourages us to pay particular attention to the potential influence on performance of operating in diverse regional contexts. Surroca, Tribó, and Zhara (2013) have suggested that multinational enterprises operate in a context of strong compliance with the institutional environment in the home country and weak compliance in the host country. In so doing, the authors highlight the global firm's role in the performance of institutional arbitrage through the relocation of irresponsible practices worldwide in order to reduce its own loss of reputation.

Although a firm's interregional internationalization may increase its exposure to public scrutiny (Kostova & Zahher, 1999; Marano et al., 2017), the reinforcement of its environmental performance in a globalized context may prove difficult for at least two reasons. On the one hand, the complexity of firms' interregional internationalization precludes coordination, integration, and exchange of knowledge and resources among geographically dispersed markets (Kostova & Roth, 2003). The challenges associated with the transfer, deployment and exploitation of a firm's competitive strengths may reduce corporate capacity, which is necessary to maintaining a high standard of performance outside of the home region (Mohr, Fastoso, Wang, & Shirodkar, 2014). Even when firms have opportunities to preserve their standards, the prerequisite investments and risks increase substantially due to the adjustments that must be made to operate outside of the home region (Quian, 2010; Verbeke & Kano, 2016).

On the other hand, the potential legitimation benefits of reducing environmental performance outside of a firm's home region are constrained. The reputational risks of poor environmental performance are limited because monitoring systems are not always adequate across multiple regions (Strike et al., 2006), and global firms are difficult to track due to the complexity of their operations. Consequently, external agents can encounter difficulties in distinguishing different levels of environmental performance in global markets and thus they will be unable to reward firms' improved environmental performance with additional legitimation.

Therefore, the likelihood of failing after making huge investments increases to a greater extent than the potential benefits of a more advanced environmental record, and so improving environmental performance may be neither easy nor efficient in reinforcing a firm's legitimacy. As such, opportunities to gain legitimacy through alternative avenues requiring less investment are critical. We propose that a global firm may find it more efficient to make a small amount of environmental effort (i.e., close to the standards in each region) and seek alternative and more cost-effective means of increasing environmental legitimacy. Our hypothesis is:

H1b: A firm's higher level of interregional internationalization is negatively related to its environmental performance.

2.2 The Moderating Role of the Home Country's Institutional Development

Although all international firms face disadvantages brought on by the liability of foreignness, firms from developing and emerging markets bear the additional disadvantage of liabilities of origin, that is "a credibility and legitimacy deficit in the eyes of host country stakeholders who [are] even more circumspect due to inefficient or missing knowledge of foreign emerging market multinational firms, their quality and

safety standards" (Madhok & Kayhani, 2012, p. 31; see also Kostova et al., 2008). That is, international stakeholders may exhibit unfavorable attitudes toward firms from emerging countries given their environmental and social reputation (Dunning & Lundan, 2008; Kang & Yang, 2010). In short, home country institutional voids may compromise perceptions of legitimacy in the host country (Fiaschi et al., 2017; Marano et al., 2017; Moore, Bell, Filatotchev, & Rasheed, 2012). Meanwhile, firms from developed countries enjoy an 'a priori' legitimation because stakeholders tend to link the firm to the characteristics of its home country.

Previous literature on international firms has analyzed the role of the home country via two methodological approaches. Traditionally, analyses of international firms from developed countries have highlighted the influence of strong home country institutional pressure to reinforce the environmental approaches of an international firm (Buysse & Verbeke, 2003; Chrismann, 2004; Kolk & Fortanier, 2013). More recently, a growing number of works have shown that firms from emerging countries require an extra effort to enter developed countries (Cuervo-Cazurra, Inkpen, Musacchio, & Ramaswamy, 2014; Luo & Tung, 2007; Wang, Luo, Lu, Sun, & Maksimov, 2013). In this paper, our interest is in how the home country can moderate (i.e., reinforce or weaken) the effects of a firm's globalization on its environmental approach. Such an analysis will help distinguish between the effect of a firm's liability of foreignness and liability of origin in a context of growing globalization. It will be achieved by simultaneously analyzing firms from multiple home countries and focusing on their levels of internationalization in different regions. We will first analyze the moderating effects of a home country on the relationship between a firm's globalization and environmental disclosure, before later examining environmental performance.

Our analysis of the relationship between a firm's globalization (interregional internationalization) and environmental disclosure concluded that disclosure is a consequence of a global firm's interest in reinforcing its legitimacy (see hypothesis 1a). We now extend this analysis by proposing that we might expect differences in that relationship depending on the level of institutional development of the home country. A firm from a home country with a poor level of institutional development must reinforce its legitimacy to a greater extent than a counterpart from a country with a strong degree of institutional development when operating in an international context. Stakeholders in developed countries consider environmental matters essential, while tending to perceive that local agents in less developed economies view such questions as less significant (Becker & Henderson, 2000). Nevertheless, although stakeholders in less developed regions may be generally less interested in environmental issues, they are likely to pay extra attention to the environmental credibility of international firms operating in their countries. In particular, they will probably be more worried about environmental issues where the firm comes from a traditionally less reliable and more relaxed context (Browne & Nuttle, 2013).

Therefore, when international operations outside of their home regions increase, firms from emerging and developing countries will become more attentive to transparency regarding their social and environmental operations in order to alleviate the growing scrutiny of foreign stakeholders, who have negative perceptions derived from liabilities of origin (Meyskens & Paul, 2010; Tashman et al., 2019). Although firms from developed countries will increase their environmental disclosure with greater globalization, the pace of improvement will be less intense relative to firms from emerging countries.

In conclusion, firms from home countries with institutional voids must attenuate their legitimacy deficit owing to the negative perceptions of foreign stakeholders from more developed economies. For these reasons, we expect interregional internationalization and environmental disclosure to be more positively associated in firms from home countries with weaker institutions than firms from home countries with stronger institutions, because these firms are generally more exposed to attributions of irresponsibility. Thus, we propose the following hypothesis:

> *H2a. A lower level of institutional development in a firm's home country reinforces the positive relationship between the firm's level of interregional internationalization and environmental disclosure. A higher level of institutional development in a firm's home country reduces this relationship.*

We will now analyze how a firm's home country may affect the negative relationship between a firm's globalization and environmental performance. It is important to highlight that "trade-offs between symbolic environmental commitment and real environmental compliance" exist among firms (Martín-de Castro, Amores-Salvadó, Navas-López, & Balarezo-Nuñez, 2017, p. 665). We expect different interests among global firms in making progress in terms of environmental performance contingent on their home countries' institutional development.

On the one hand, given that a firm from an emerging market faces greater scrutiny when operating globally than a firm from a developed country (Fiaschi et al., 2017), it faces additional pressures and incentives to improve its operations and reduce the risks of a negative situation by ensuring that its actions align with what it reports. In other words, for less developed countries' firms to gain legitimacy abroad, it is not sufficient to be

transparent and to voluntarily disclose environmental information: good environmental performance must follow.

It is also necessary to recognize that learning opportunities for firms from countries with varied levels of institutional development differ when operating in a global context. Emerging and developing countries' firms must develop the capacity to survive and thrive in their less developed home markets, which can "turn into an advantage for those firms that can deploy the knowledge accumulated when internationalizing" (Cuervo-Cazurra, Ciravegna, Melgarejo, & Lopez, 2018, p. 212). These mechanisms developed by emerging and developing countries' firms at home can help them improve their capacity to compete with firms from more institutionally developed countries when facing more complex contexts with higher standards. Thus, developing and emerging countries' firms may enhance their reputation and achieve legitimacy by increasing their social or environmental performance to demonstrate compliance with accepted global standards (Marano & Kostova, 2015; Zyglidopoulos, Williamson, & Symeou, 2016).

On the other hand, firms from more developed home countries most likely operate with good environmental standards even without operating internationally, and may have fewer technical opportunities to improve their environmental performance when expanding to less developed regions. Furthermore, they may have fewer incentives to keep improving their environmental performance in less advanced markets, and possibly even enjoy the protection of their home country's reputation, enabling them to hide their environmental issues under less stringent monitoring schemes rather than learning how to improve their environmental performance when going global.

In general, less institutionally developed economies demand less from firms in terms of environmental performance. More pervasive institutional voids at home are associated

with weaker environmental protection and feeble enforcement against environmentally irresponsible behavior (Tashman et al., 2019). As firms expand beyond their national borders and the number of regulators and other stakeholders increase, they must adhere to new rules and expectations.

Hence, in order to overcome liabilities of foreignness and origin, firms from less developed countries may decide to reinforce their environmental performance as a consequence of operating internationally. They have strong incentives to keep boosting their environmental legitimacy as their global operations develop, and face considerable hazards in not doing so. At the same time, firms from more advanced countries may actually reduce their environmental performance through operating in contexts with less stringent monitoring, while enjoying the partial protection of the legitimacy accorded by their home market. It is interesting that global firms from emerging countries may have incentives to operate beyond regulations in advanced economies. Simply complying with the host country's legislation regarding environmental performance may be insufficient to free firms from their liabilities of origin, as negative perceptions and stereotypes follow firms wherever they go. Our hypothesis is:

> *H2b. A higher level of institutional development of a firm's home country increases the negative relationship between the firm's level of interregional internationalization and environmental performance. A lower level of institutional development of a firm's home country reduces this negative relationship.*

3 METHODOLOGY

3.1 Data and sample

The sample used for the analysis comprises a number of publicly traded firms in the energy and utility sectors. Using the Thomson Reuters Eikon database, which collects comprehensive information on firms' operating behavior, environmental management and financial performance, we built a longitudinal data set with data for 292 firms in the period from 2011 to 2018. The energy sector provides an ideal context for our analysis of the relationships between firms' internationalization, home country institutional development and their environmental behavior for the following reasons. First, the production, transportation and sale of energy products is known to be responsible for the majority of global greenhouse gas emissions, primarily due to the burning of fossil fuels (Moorhead & Nixon, 2015). According to the International Energy Agency (an OECD organization), in 2016 the energy sector produced 46.4% of the global CO_2 emissions derived from fuel combustion (IEA, 2018). Second, the very international nature of the firms in this industry and the global trend toward cleaner energy production are being accompanied by growing improvements in some firms' environmental performance when they expand their operations out of their home region, while others seek new business opportunities abroad in order to escape this trend and the concomitant regulatory pressure. Analyzing this industry provides us with the opportunity to examine the implications of these heterogenous approaches. Third, given the shift in the focus of global growth and pollution towards emerging countries and the increased importance of small developing countries in the international energy sector (Cumming, Hou & Lee, 2016), it is interesting to study how the institutional development of the energy firms' home countries and the

host countries in which they operate can play an increasingly determinant role in their environmental behavior.

The final sample was determined via the following steps. First, we compiled a set of 4,112 firms in the energy and energy-related utilities sectors according to the Thomson Reuters Business Classification. Second, we excluded those firms that did not present environmental or financial information for any of the years considered in this study. We then proceeded to analyze the firms in the sample individually in order to remove those firms without the information required to build the internationalization variables. After lagging all explanatory variables by one year, we obtained a final longitudinal data set of 1,484 firm-year observations.

Table 1 provides a breakdown of the sample by sub-industry and home region. The sub-industries with the highest representation include oil & gas exploration and production (18.84%), oil related services and equipment (17.47%), and oil & gas refining and marketing (14.04%). The majority of the firms are originally from North America (36.30%) or Eastern Asia (11.99%), while Northern and Southern Europe represent 15.41% of the sample.

		Firm home region														**Total**
		AAs	CAs	EAs	EE	LAm	Mel	NAm	NE	SEA	SAf	SAs	SE	WAs	WE	
Firm sub-industry	Coal	5	0	5	2	0	0	5	0	6	2	0	0	0	1	26
	Electric utilities	4	0	5	4	4	0	8	3	0	0	1	6	0	2	37
	Independent power producers	0	0	2	0	2	0	5	0	2	0	0	1	0	0	12
	Integrated oil & gas	1	0	1	7	3	0	2	1	0	0	0	1	0	2	18
	Multiline utilities	0	0	0	0	0	0	2	0	1	0	0	0	0	0	3
	Natural gas utilities	0	0	4	0	1	0	3	0	0	0	0	1	0	0	9
	Oil & gas drilling	0	0	1	0	0	0	8	2	0	0	0	0	0	1	12
	Oil & gas exploration and production	13	1	3	1	2	1	23	8	1	0	1	0	0	1	55
	Oil & gas refining and marketing	0	0	10	2	4	0	13	3	2	0	1	3	1	2	41
	Oil & gas transportation services	0	0	0	1	0	0	7	0	0	0	0	1	0	0	9
	Oil related services and equipment	3	0	1	0	0	0	25	7	4	0	0	3	0	8	51
	Renewable energy equipment & services	1	0	3	0	0	0	1	4	0	0	1	1	0	2	13
	Renewable fuels	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
	Uranium	2	0	0	0	0	0	2	0	0	0	0	0	0	0	4
Total		29	1	35	17	16	1	106	28	16	2	4	17	1	19	292

AAs: Australasia, **CAs**: Central Asia, **EAs**: Eastern Asia, **EE**: Eastern Europe, **LAm**: Latin America, **Mel**: Melanesia, **NAm**: Northern America, **NE**: Northern Europe, **SEA**: Southeastern Asia, **SAf**: Southern Africa, **SAs**: Southern Asia, **SE:** Southern Europe, **WAs**: Western Asia, **WE**: Western Europe

Table 1. Sample firms by sub-industry and home region.

3.2 Measures

Dependent variables. Our first dependent variable, *environmental disclosure*, was operationalized using a set of 23 environmental issues on which firms may or may not report. Based on data provided by the Thomson Reuters Eikon database, we constructed a measure of environmental disclosure by computing the ratio of items reported to the total number of environmental matters considered. We measured whether a firm reported on each of the 23 environmental issues with binary items ('0' if the firm did not report on a specific environmental issue, '1' if it did). Our approach followed the method used by previous literature to measure corporate social responsibility disclosure (e.g., Hwan and Ioannou, 2016; Marano et al., 2017). Appendix A presents the 23 environmental issues considered in order to build this variable.

Our second dependent variable, *environmental performance*, can be defined as "the environmental impact that the enterprise's activity has on the natural milieu" (Claver, López, Molina & Tari, 2007: p. 606). We measured it using the Thomson Reuters Environmental Social and Governance Emissions Score (TRESG emission score) as a proxy. This comprehensive measure developed by Thomson Reuters evaluates how firms fare in comparison with their peers in terms of their commitment to addressing key global corporate environmental issues. According to Thomson Reuters, their proprietary emission score "measures a company's commitment and effectiveness towards reducing environmental emissions in the production and operational processes" (Thomson Reuters ESG Score Methodology, 2019, p. 16). The measure is calculated using percentile rank

scoring and therefore ranges from 0 to 100 depending on how firms compare to their peers when measuring a number of environmental metrics that cover the spectrum of key environmental concerns, including estimated equivalent CO_2 emissions, environmental management certifications, and environmental investment initiatives. The variables developed by Thomson Reuters on environmental issues are widely accepted and have been used in prior studies (e.g., Duque-Grisales & Aguilera-Caracuel, 2019; Gómez-Bolaños et al., 2019; Semenova & Hassel, 2015).

Independent variable. *Interregional internationalization* represents the percentage of sales of firms outside their home regions. We considered five regions (Africa, Americas, Asia, Europe, and Oceania) to determine the out-of-region sales due to limitations in the available data, as firms group their sales in different regions that do not enable them to be broken down further into smaller sub-regions. Given that many studies in international business have used the ratio of foreign sales to total sales as a measure of internationalization (e.g., Tashman et al., 2019), and with a regional classification in line with Qian, Khoury, Peng, and Qian (2010) and Wiersema and Bowen (2008), we measured interregional internationalization as the percentage of total sales from outside the home region.

Moderating variable. As a moderating variable, we considered *home country institutional development*, which we anticipated would moderate the relationship between firms' interregional internationalization and their environmental disclosure and performance. We used publicly available data from the World Bank to construct a measure for this variable. The Worldwide Governance Indicators (WGI) evaluate six aggregated indicators of control of corruption, government effectiveness, political stability, rule of

law, regulatory quality, and voice and accountability on a scale of -2.5 (indicating poor governance) to 2.5 (indicating good governance). Following the work of other authors (e.g., Globerman & Shapiro, 2003; Marano et al., 2017; Tashman et al., 2019), we used principal component analysis in order to build a construct that would allow us to measure countries' levels of institutional development with a single value.

Control variables. We included *firm size* as a control variable, as previous studies have found it to be related to a firm's environmental behavior (e.g., Aragón-Correa, 1998). We measured firm size using the natural logarithm of total annual sales. *Profitability* was also included in the model because better financial performance has been previously linked to environmental matters (e.g., Gallego-Alvarez et al., 2017). We used return on assets (ROA) as a proxy for profitability. To control for possible sub-industry effects, we included the *industry* variable, computed as 13 dummy variables for the 14 sub-industries presented in Table 2. We controlled for firms' *home regions* while also considering the 14 sub-regions presented in the table. We operationalized this variable using 13 dummy variables to represent the different regions.

Sub-industries	Regions
Coal	Australasia
Electric Utilities	Central Asia
Independent Power Producers	Eastern Asia
Integrated Oil & Gas	Eastern Europe
Multiline Utilities	Latin America
Natural Gas Utilities	Melanesia
Oil & Gas Drilling	Northern America
Oil & Gas Exploration and Production	Northern Europe
Oil & Gas Refining and Marketing	Southeastern Asia
Oil & Gas Transportation Services	Southern Africa
Oil Related Services and Equipment	Southern Asia
Renewable Energy Equipment & Services	Southern Europe
Renewable Fuels	Western Asia
Uranium	Western Europe

Table 2. Components of the sub-industry and home region variables.

4 RESULTS

We selected random-effects GLS regression with clustered robust standard errors to analyze our data. This technique was suited to our purposes because it has frequently been used to analyze longitudinal data with many cross sections and few time periods (Tashman et al., 2019). We chose random effects over fixed effects because the latter do not work well with variables that have limited variance over time (Cameron & Trivedi, 2010). One of the key variables in our analysis, home country institutional development, did not change much during the period under analysis. Robust standard errors were used to avoid serial correlation and heteroskedasticity. We opted for robust standard errors clustered at the firm level because they offer more reliable results than non-clustered robust standard errors (Petersen, 2009). The results presented were obtained by analyzing models in which all of the explanatory variables were lagged by one year in order to avoid reverse causality. The descriptive statistics of our variables are shown in Table 3.

		1	2	3	4	5	6	7	8
1	Environmental disclosure	1							
2	Environmental performance	0.743***	1						
3	Interregional internationalization	-0.137***	-0.092***	1					
4	Home country institutional development	-0.126***	-0.125***	0.185***	1				
5	Firm size	0.523***	0.532***	-0.194***	-0.287***	1			
6	Profitability	0.144***	0.170***	-0.115***	-0.185***	0.408***	1		
7	Industry	-0.211***	-0.024	0.210***	0.276***	-0.101***	-0.049*	1	
8	Region	0.152***	0.228***	0.119***	0.058**	0.224***	0.137***	0.125***	1
Mean		0.214	56.035	0.343	1.146	21.613	0.006	7.054	6.667
Standard deviation		0.206	28.364	0.339	0.801	2.405	0.147	3.675	3.403
Min		0.000	0.200	0.000	-0.980	11.070	-1.640	1.000	1.000
Max		0.830	99.830	1.000	2.080	26.890	0.810	14.000	14.000

$^{\dagger}p<0.10$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

Table 3. Descriptive statistics and correlations.

We used six models to test our hypotheses. Model 0a tested the relationship between the control variables and environmental disclosure, while model 0b did the same with environmental performance.

Model 1 tested the influence of our independent variable (interregional internationalization) on the environmental disclosure of firms. Model 2 tested the influence of interregional sales on the environmental performance of firms. In Models 3 and 4, we tested for a moderating effect of firms' home country institutional development on the relationship between interregional internationalization and environmental disclosure (Model 3) and/or environmental performance (Model 4).

The regression results of our models are depicted in Table 4. Model 0a confirmed statistically significant relationships of the control variables of firm size (b=0.035, p=0.000) and profitability (b=-0.072, p=0.013) with environmental disclosure. Although

firm size had the expected, positive effect, profitability was found to have a negative effect on environmental disclosure. In a similar way, firm size (b=3.790, p=0.000) and profitability (b=-9.003, p=0.024) were found to have a significant effect on our second dependent variable, environmental performance.

Hypothesis 1a predicted a direct, positive relationship between a firm's level of sales outside its home region and its environmental disclosure. Model 1 revealed a positive, statistically significant relationship between interregional internationalization and the environmental disclosure of firms (p=0.000), thus confirming Hypothesis 1a. Firms with a higher level of sales outside their home region were found to disclose more environmental information than firms with a lower level of interregional sales. Firm size and profitability were found to have a statistically significant effect on firms' environmental disclosure (b=0.041, p<*0.001* and b=-0.053, *p<0.100*, respectively).

Hypothesis 1b predicted a direct, negative relationship between a firm's interregional internationalization and its environmental performance. The coefficient of interregional internationalization was not significant in Model 2, and so Hypothesis 1b was not confirmed. We suspect that this might owe to differences in the home countries, which is why we tested the moderating effect of home country institutional development in Model 4. The control variables were statistically significant at the *p<0.001* (firm size, b=2.905) and *p<0.01* (profitability, b=-9.447) levels.

Model 3 provided statistical evidence (p=0.002) to confirm Hypothesis 2a, which predicted that firms' home country institutional development would have a negative moderating effect on the relationship between interregional internationalization and environmental disclosure.

Hypothesis 2b predicted that firms' home country institutional development would have a negative moderating effect on the relationship between interregional internationalization and environmental performance. Although the direct relationship between out-of-region internationalization and environmental performance was not significant, Model 4 revealed that home country institutional development had a negative, statistically significant (p=0.089) moderating effect on the relationship.

	Model 0a		Model 0b		Model I		Model II		Model III		Model IV	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Interregional internationalization					0.090***	0.019	0.277	2.716	0.181***	0.036	6.590	4.603
Firm size	0.035***	0.003	3.790***	0.550	0.041***	0.004	2.905***	0.553	0.042***	0.004	2.933***	0.555
Profitability	-0.072*	0.029	-9.003*	3.983	-0.053†	0.029	-9.447**	3.234	-0.052†	0.030	-8.990**	3.248
Industry effects	Included		Included		Included		Included		Included		Included	
Region effects	Included		Included		Included		Included		Included		Included	
Home country institutional development									0.071***	0.016	3.230	2.602
Interregional internationalization x home country institutional development									-0.070**	0.023	-5.177†	3.043
Constant	-0.540***	0.069	-30.076**	-2.67	-0.715†	0.076	-12.936	11.768	-0.831***		-16.693	12.595
R^2	0.363		0.303		0.435		0.347		0.457		0.357	

†p<0.10. *p<0.05. **p<0.01. ***p<0.001. S.E. (Standard Error)

Table 4. Regression results.

These results provide interesting insights concerning how firms from developed and developing countries can achieve legitimacy in their international operating environments. Firms from countries with a lower level of institutional development were found to increase their environmental disclosure when expanding their operations outside their home region to a greater extent than firms from countries with a higher degree of institutional development. In fact, at higher levels of interregional internationalization,

firms from less developed countries were found to exceed the disclosure levels of developed country firms (see Figure 1).

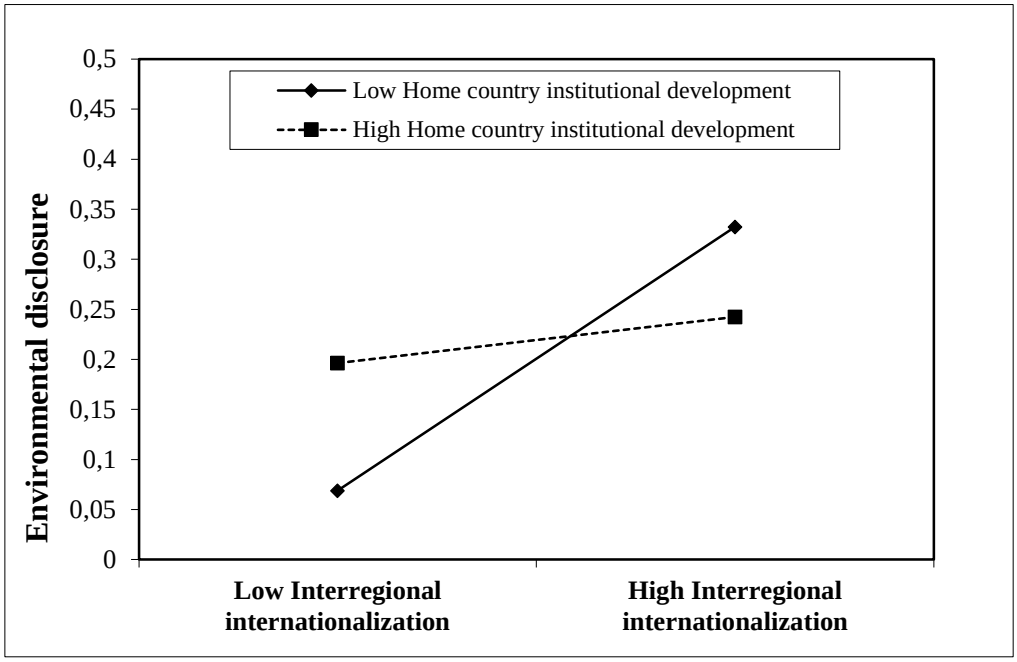

Figure 1. Interaction of home country institutional development on the relationship between interregional internationalization and environmental disclosure.

In line with previous work, the confirmation of Hypothesis 2a may indicate that firms from emerging and developing countries endeavor to overcome the negative perceptions that liabilities of origin create in the eyes of stakeholders from outside their home region by increasing their transparency in environmental matters (Tashman et al., 2019).

The analysis of the results of the negative, significant moderation presented in Hypothesis 2b points to interesting conclusions. The interaction graph is presented in Figure 2. The environmental performance of firms with poor home country institutional development increased considerably with interregional internationalization. As firms from developing and emerging countries expand their operations outside their region, they are likely to

face stronger regulatory frameworks and stakeholder pressures that compel them to increase their environmental performance.

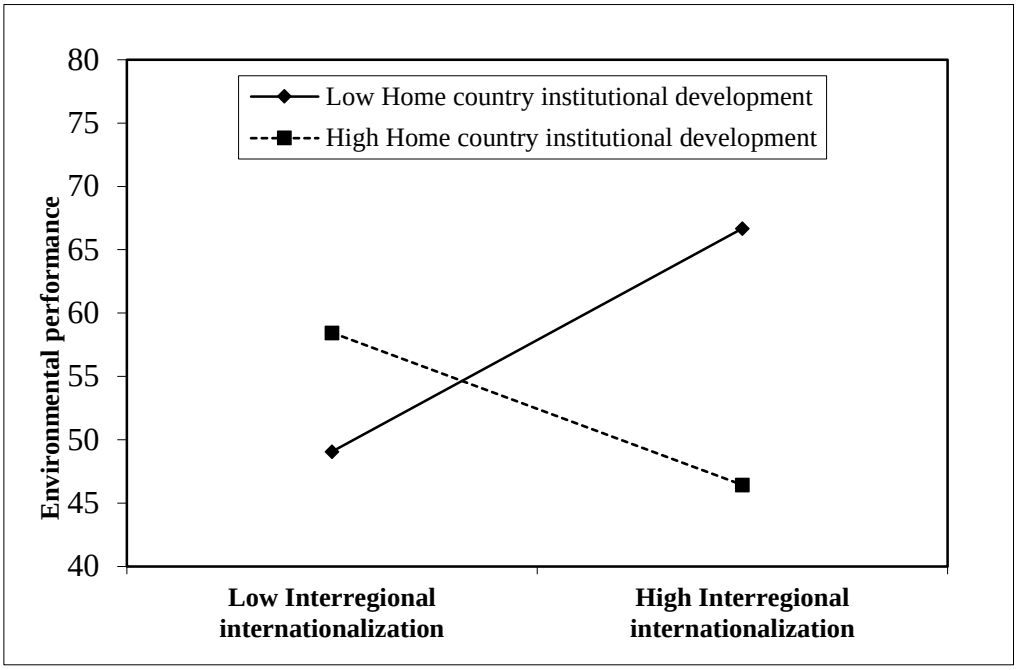

Figure 2. Interaction of home country institutional development on the relationship between interregional internationalization and environmental performance.

On the other hand, the environmental performance of firms from developed countries decreases as they grow their business outside their region. This finding would, at first sight, support the pollution haven hypothesis. However, when the host country or region has a poor level of development, it simply may not be possible to implement the environmental standards that firms from developed regions have in place in their headquarters, as the prerequisite resources are not available.

5 DISCUSSION

Based on the premise of the relevance of legitimation for obtaining a 'license to operate' in international contexts, this study has examined how global firms respond to institutional concerns regarding the natural environment as an effective means of

increasing their legitimacy in an international context (Babiak & Trendafilova, 2011; Bansal & Roth, 2000). Our interest in global firms encouraged us to pay special attention to the potential influence on the environmental approach of operating in very different regional contexts, because the liability of foreignness increases when a firm's internationalization is focused outside of its international home region (Asmussen & Goerzen, 2013; Rugman & Oh, 2013).

Our findings provide evidence that a firm's greater globalization (interregional internationalization) will generate a strong incentive for it to increase its legitimacy by reinforcing its environmental disclosure. A stronger liability of foreignness and exposure to a wider range of stakeholders, global norms and global legitimating actors will reinforce the incentives associated with using this visible, easy, and effective way of demonstrating interest in environmental matters. In general, increasing voluntary environmental disclosure may be an effective way to manage and maintain legitimacy in institutionally distant host countries, and to avoid any negative spillover to another country as a consequence of legitimacy problems elsewhere.

We did not find support for our second hypothesis: that a higher degree of interregional internationalization would be negatively related to environmental performance. Early studies in the US manufacturing sector (Kennelly & Lewis, 2002), a mix of the chemical, food and textile industries in Belgium (Buysse & Verbeke, 2003) and Chinese firms form various sectors (Christmann & Taylor, 2001) have found a positive link between a firm's level of internationalization and its environmental performance. Other, more recent studies looking at global firms from multiple industries have found that international firms may act more irresponsibly in terms of their environmental behavior (Aragón-

Correa et al., 2016) or may act responsibly and irresponsibly at the same time (Strike et al., 2006). Our analysis of the moderating effect of home country institutional development confirms the importance of a more fine-grained analysis on the nature of this relationship.

The results regarding the moderating influence of the liabilities of the home country help us understand the limited significance of the direct effect. The moderating regression analysis revealed that the sign of the relationship between globalization and environmental performance would change based on the home country's institutional situation. In this context, a statistically limited value on the direct relationship highlights the importance of separating the analysis.

Importantly, our paper notes the strong and significant relevance of the liabilities of home to the influence of globalization on environmental approaches. Specifically, a global firm from an institutionally weak home country must reinforce its legitimacy by disclosing its environmental information and improving its environmental performance to a greater extent than an international firm from a country with a strong institutional basis. Thus, firms from less developed countries must make additional efforts to attenuate their legitimacy deficit due to the liability of origin. Indeed, our results suggest that global firms originally from emerging countries may seek legitimacy by increasing their environmental disclosure and environmental performance in order to demonstrate their compliance with accepted stringent standards as their global operations grow. It is particularly interesting to learn that the global firms from developed countries sampled presented a diminishing level of environmental performance (i.e., more pollution and environmental impacts) with increased globalization. However, global firms from

emerging countries improved their environmental performance in similar situations. For instance, a firm from Canada that has operations primarily in North America (its home region) displayed better environmental performance in comparison with a firm that has a more global footprint (a higher level of interregional internationalization). When comparing two energy firms from Russia (an emerging country), we observed that the firm with a more home region focused internationalization strategy showed lower levels of environmental performance than the second firm, a multinational with a higher level of its operations outside the home region.

Our study contributes to research on the country-of-origin and global strategy effects on legitimation strategies in terms of the global context and environmental approaches. First, it contributes to the research on environmental approaches as legitimation strategies in an international context by offering a novel approach to clarify the debate regarding the implications of firms adopting a global strategy. Our findings build on the growing body of research concerning the practical implications of environmental progress among international firms (e.g., Aragon-Correa et al., 2016; Babiak & Trendafilova, 2011; Christmann, 2004; Delmas & Montes-Sancho, 2011). Second, our work extends previous research by showing that the level of a home country's institutional development can influence the relationship between international firms' global strategy and environmental disclosure and performance. While some previous literature has analyzed the implications of internationalization on the social and environmental issues of firms from developing or emerging countries (e.g., Fiaschi et al., 2017; Marano et al., 2017; Tashman et al., 2019), this paper offers a unique analysis of firms from developed and developing home countries in relation to the environmental approach. Third, our work also addresses recent

calls to study why firms engage in corporate social responsibility decoupling and greenwashing, including advanced economy firms (e.g., Tashman et al., 2019).

For managers, these findings point to the importance of using environmental issues to achieve legitimacy in international contexts. Managers of global firms face significant challenges of legitimacy when entering other regions. They must ensure that their firms exhibit an embedded approach and earn the trust of local agents. Although the debate has traditionally focused on the real implications of processes to gain legitimacy when entering international markets, our results demonstrate that the urgency of and interest in increasing environmental performance and disclosure after going global are rather dependent on the previous status of the firm. It is particularly clear in our results that the executives of firms from developed countries enjoy an extra degree of credibility when making their environmental approaches, and their environmental impacts can remain under the radar, whereas those from emerging countries are required to make an extra effort, not only providing additional environmental information but also improving environmental performance.

Despite its contributions, our analysis is subject to some limitations. In particular, we analyzed a single industry, and so although our conclusions may offer interesting contributions to the literature and provide us with opportunities to compare similar firms, the results may not be generalizable to other sectors. Furthermore, the use of the Thomson Reuters Emission Score as a proxy for environmental performance presents some limitations, because even though it "measures a company's commitment and effectiveness towards reducing environmental emissions in the production and operational processes" (Thomson Reuters, 2019, p. 16) and is therefore appropriate for our analyses, it is not possible to customize its components. Hence, different proxies of

environmental performance might provide a different perspective of the situation in certain firms.

Future studies could analyze different industries and identify various measures for a firm's progress in terms of environmental performance. It is also necessary to attend to how micro-institutional factors may generate effects in terms of firms' environmental approaches. A micro-institutional perspective may complement our general approach by analyzing how regional institutional contexts can affect firms differently depending on company-specific factors, such as managers' background or the structure of the board. We believe that future research concerning the intersections between the reactions of different governance agents to the globalization process will also help develop a greater understanding of the environmental reactions of international firms.

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Appendix A. Breakdown of items used for measuring the variable "Environmental disclosure"

Title	Description
Biodiversity Impact Reduction	Does the company report on its impact on biodiversity or on activities to reduce its impact on the native ecosystems and species, as well as the biodiversity of protected and sensitive areas?
Emissions Trading	Does the company report on its participation in any emissions trading initiative?
NOx and SOx Emissions Reduction	Does the company report on initiatives to reduce, reuse, recycle, substitute, or phase out SOx (sulfur oxides) or NOx (nitrogen oxides) emissions?
VOC or Particulate Matter Emissions Reduction	Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC) or particulate matter less than ten microns in diameter (PM10)?
VOC Emissions Reduction	Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC)?
Particulate Matter Emissions Reduction	Does the company report on initiatives to reduce, substitute, or phase out particulate matter less than ten microns in diameter (PM10)?
Waste Reduction Initiatives	Does the company report on initiatives to recycle, reduce, reuse, substitute, treat or phase out total waste?
e-Waste Reduction	Does the company report on initiatives to recycle, reduce, reuse, substitute, treat or phase out e-waste?
Environmental Restoration Initiatives	Does the company report or provide information on company-generated initiatives to restore the environment?
Staff Transportation Impact Reduction	Does the company report on initiatives to reduce the environmental impact of transportation used for its staff?
Environmental Expenditures Investments	Does the company report on its environmental expenditures or does the company report to make proactive environmental investments to reduce future risks or increase future opportunities?
Environmental Partnerships	Does the company report on partnerships or initiatives with specialized NGOs, industry organizations, governmental or supra-governmental organizations, which are focused on improving environmental issues?
Toxic Chemicals Reduction	Does the company report on initiatives to reduce, reuse, substitute or phase out toxic chemicals or substances?
Green Buildings	Does the company report about environmentally friendly or green sites or offices?
Environmental Supply Chain Partnership Termination	Does the company report or show to be ready to end a partnership with a sourcing partner, if environmental criteria are not met?

Land Environmental Impact Reduction	Does the company report on initiatives to reduce the environmental impact on land owned, leased or managed for production activities or extractive use?
Environmental Products	Does the company report on at least one product line or service that is designed to have positive effects on the environment or which is environmentally labeled and marketed?
Eco-Design Products	Does the company report on specific products which are designed for reuse, recycling or the reduction of environmental impacts?
Environmental Assets Under Management	Does the company report on assets under management which employ environmental screening criteria or environmental factors in the investment selection process?
Organic Products Initiatives	Does the company report or show initiatives to produce or promote organic food or other products?
Product Impact Minimization	Does the company reports about take-back procedures and recycling programmes to reduce the potential risks of products entering the environment or does the company report about product features or services that will promote responsible and environmentally preferable use?
Take-back and Recycling Initiatives	Does the company reports about take-back procedures and recycling programs to reduce the potential risks of products entering the environment?
Product Environmental Responsible Use	Does the company report about product features and applications or services that will promote responsible, efficient, cost-effective and environmentally preferable use?