

**ENVIRONMENTAL STAKEHOLDER INTERESTS PRIORITIZATION IN BRAZIL: a governmental and private regulatory impact analysis**

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## **1. INTRODUCTION**

Albeit the great interest in stakeholder theory, some aspects need to be clarify such as stakeholder prioritization (DONALDSON; PRESTON, 1995) and the degree to which managers prioritize their claims (MITCHELL; AGLE; WOOD, 1997). In a literature review, Mascena et al. (2015) has found that there are two approaches to analyze the stakeholder prioritization. The first one is the perceptions about the stakeholder importance, and the other possibility is related to stakeholders' interests level met. Nevertheless, there are least researches in line with the second approach such as the studies of Michelon, Boesso and Kumar (2013) and Boaventura et al. (2009) and even fewer studies analyzing the stakeholder prioritization based on non-managerial variables such as Mascena, Fischmann and Boaventura (2018).

Several studies of the environmental stakeholder prioritization are in line with the stakeholder importance perception approach under the Mitchell, Agle and Wood (1997) salience model that is based on stakeholders power, legitimacy and urgency such as Gago and Antolín (2004) and Weber and Marley (2012) studies. Applying the approach of stakeholders' interests level met are either fewer find studies. The most closely to it is Lischinsky (2015). However, it has not considered the environmental stakeholder interests prioritization specifically and either the influence of non-managerial variables in environmental prioritization. To advance in the understanding of what might interfere in the met of environmental stakeholder interests prioritization concerning non-managerial variables is relevant to overcome some limitations appointed in Lischinsky (2015) by the author himself such as consider the regulation requirements that can vary across nations as a possible variable to influence it

Based on that, the paper addresses the research problem of the relationship between environmental regulations and environmental prioritization by firms in the Brazilian context. Thereby, the papers' objective is to analyze the relationship between the environmental stakeholder interests prioritization in relation to public and private regulation approaches in firms operating in Brazil. Environmental regulation is considered as a non-managerial variable that might influence the stakeholder environmental interest prioritization. As environmental regulation, it is referred to the public and private approaches with their coercive and normative powers, hard and soft laws (BACKER, 2007; MONTIEL; DELGADO-CEBALLOS, 2014; DIMAGGIO; POWELL, 1983; MARQUES, 2015). The paper follows that the most prioritized stakeholders have a higher level of their interests met. Empirical analysis was based on Brazilian firms' annual sustainability reports published accordingly the Global Report Initiative (GRI) structure. In doing so, it will be considered that the practice and study of corporate sustainability reports (CSR) should be put within a country's specific institutional context in order to capture the influence of a particular socio-political context over corporate reporting behavior (ELIJIDO-TEN; KLOOT; CLARKSON, 2010).

The measurement method was based on the environmental interests attendance disclosed by firms in reports. The paper theoretical contribution is multiple. Firstly, the paper explores one more non-managerial variable to be considered in stakeholder prioritization. Secondly, the paper considers the environment as a legitimate type of firms' stakeholders, advancing in empirical studies related to its prioritization. When doing this, the paper advances in a more ecocentric view of stakeholder theory empirically. Thirdly, many contributions are describing the private environmental regulation (KRUUSE et al., 2019; MARTENS et al., 2018; MENA; PALAZZO, 2012; MENA; WAEGER, 2014; SOUNDARARAJAN; BROWN; WICKS, 2019), however, few

is known about the private environmental regulation real influence. The paper contributes to fulfilling this gap by empirically measuring its influence on firms' environmental responses. Fourthly, beyond measuring the regulatory influences on environmental prioritization, the approaches are compared. To doing so, it was proposed a counterintuitive hypothesis.

The relevance of the non-managerial variable chosen is due to although there was an increase in environmental laws since 1972, it was also followed by failures to fully implement and enforce legislations what represents challenges to environmental interests (UNEP, 2019). Similarly, the private regulations are also contested because of weak compliance, poor monitoring practices, and their impact in developing countries not be properly considered (MARQUES, 2015). In Brazil context, corporates are inside in an institutional context with a long time environmental incremental process (SEIXAS et al., 2020) with advances and setbacks in regulation (ADAMS et al., 2020).

## **2 THEORETICAL FOUNDATION**

### **2.1 Stakeholder prioritization**

The stakeholder theory determines how managers could prioritize stakeholders interests (PHILLIPS; FREEMAN; WICKS, 2003). In their literature review, Mascena et al. (2015) have found different variables associated with stakeholder prioritization. To the stakeholder importance perception approach, variables such as stakeholders salience, importance, pressures and influence were found in previous studies. Variables such as stakeholder strategic contribution to value creation, justice and fairness, and firms 'objective function were associated in earlier studies applying the stakeholder interest level met approach.

Following the second approach based on the stakeholders' interests level met, Michelin, Boesso and Kumar (2013) have explored the relationship between the prioritization of CSR issues (environment, community, human rights, goods quality, corporative governance, diversity and working relationships) with great strategic importance to corporations and its impact on corporate performance. They have found a positive relation among strategically resources allocation to the stakeholder preferred CSR issues and corporate market and accounting performance. However, there were not found positive relationships for all seven CSR issues. In a different perspective found in previous studies by Mascena et al., (2015), Mascena, Fischmann and Boaventura (2018) have analyzed the stakeholders' prioritization in 90 Brazilian firms based on a non-managerial variable (industry sector). Methodologically, they have used the Mann-Whitney non-parametric test to compare industry sectors with higher powerful employees and firms of industry sectors with non-powerful employees. They have shown that the internal stakeholders have a higher level of their interests prioritized compared to the external ones across the industry sectors groups with higher powerful employees. Their finds have provided the relevance of non-managerial variables in stakeholder prioritization. However, theoretically, there are other possible variables not considered in Mascena, Fischmann and Boaventura (2018) that could influence the stakeholder prioritization that deserves to be tested. Especially in the case of the environmental stakeholder, there are relevant variables to be considered in its prioritization such as the regulation.

### **2.2 Environmental prioritization**

On the salience approach, the environment prioritization was studied with regard to identifying the human stakeholders' attributes influences in environmental salience by Gago and Antolín (2004). The study was related to managers' perceptions about the human stakeholders' salience attributes to satisfy their environmental interest. The results have demonstrated that the

human stakeholders' urgency and legitimacy attributes concerning the environment were the most important ones to influence corporate environmental actions.

On the stakeholders' interests level met approach, in a survey Vazquez-Brust et al. (2010) have focused on deeper empirical understanding between managers' perceptions of stakeholders pressures and the importance they received in CSR strategies. Their paper focus was the human stakeholders' pressures and environmental protection actions by Argentinean firms the authors have revealed the existence of differences in firms' stakeholder groups treatment and managers perceptiveness about the stakeholder salience based on the intensity of pressures they exert. In a qualitative analysis about the consistency of the natural environment representation as a stakeholder on CSR compared to other human stakeholders, Lischinsky (2015) has found that the natural environment has no agency representation and capacity for engagement such as other stakeholders has. The results raise doubts about the natural environment becoming a definitive stakeholder in practice and on CSR reporting by firms. Although, there were indications that environmental issues represent concerns for companies in their reports, there was no evidence that organizations perceived themselves as part of a network of relationships with the natural environment.

Henriques and Sadorsky (1999), Buysse and Verbeke (2003), and Weber and Marley (2012) studies based on manager perceptions about the environment concern. Henriques and Sadorsky's (1999) have hypothesized a relationship between Canadian firms environmental strategies proactiveness and pressures perception such a regulation. Buysse and Verbeke (2003) have realized an analysis of the types of environmental strategies and the stakeholder pressures in firms operating in Belgium. Similarly, in a Spanish firms survey, Murillo-Luna, Garcés-Ayerbe and Rivera-Torres (2008) have explored the environmental strategies to environment and the stakeholders' pressures, one of them, regulation. Weber and Marley (2012) have considered the influence of non-managerial variables on stakeholder prioritization, arguing that Mitchell, Angle and Wood's (1997) approach of stakeholder salience in the case of environment might be influenced by the firms' nationality and dependency on natural resources. Nevertheless, they have not found support for these hypotheses.

### **2.3 Hypotheses development**

Governmental regulations provide coercive power (DEAN; BROWN, 1995; PORTER; VAN DER LINDE, 1995a; SHARMA; VREDENBURG, 1998; SHRIVASTAVA; HART, 1995). Governments are powerful and legitimate to exert pressures through legislation, regulation and policies (SCHMIDT et al., 2012). This power is based on "hard" law written in codes and constitutions that influence the environmental externalities produced by the production process (GILBERT; RASCHE, 2008; MENA; PALAZZO, 2012). The corporate sustainability is a national issue (CUBILLA-MONTILLA et al., 2020). Legal country level should be considered a key factor to lead organizations to comply with regulations to avoid sanctions (BOIRAL; GENDRON, 2011; HART, 1997). The literature predicts that environmental responses are more common in industries subject to strict environmental legislation (BANERJEE; LYER; KASHYAP, 2003). Moreover, because of the higher pressures to disclose environmental information in CSR, it is predicted that companies in highest coercive regulatory pressure tends to be more likely to disclose least-reported environmental indicators (CUBILLA-MONTILLA et al., 2020). Supported on this, it is hypothesized to companies operating in Brazil:

**H<sub>1a</sub>:** The environmental governmental regulation positively influences the environmental stakeholder interest prioritization.

Business is not only a "rule-taker" of state regulation, but the business also has a role of "rule maker" especially in voluntary regimes (ANDRADE; PUPPIN DE OLIVEIRA, 2015). Private regulation mechanisms exercise normative power (DELMAS; TOFFEL, 2004; HEROLD et al., 2019; KASSINIS; VAFEAS, 2006) based on soft law approaches that are not based on legal obligations (MENA; PALAZZO, 2012). These type of regulations are based on voluntary standards and codes of conducts (MARTENS et al., 2018), and it has raised in need of a collaborative governance context due to a many states inability to regulate in a global era when concerns such as the environment has increased (MARQUES, 2015). Types of private regulatory initiatives (PRIs) defines standards for corporate responsibility and sometimes monitor and enforce the application of private rules (MENA; WAEGER, 2014) to fulfil the governmental regulation gap such as multistakeholder initiatives (MSI) that is composed by corporations, civil society organizations, and sometimes, other actors such as the academia, and business associations (GILBERT; RASCHE, 2008; MENA; PALAZZO, 2012). There are many MSI initiatives across the globe, it might be industry-specific or pan-industry, and most sectors have at least one MSI initiative, and some are associated with more than one. (MARQUES, 2015). Moreover, it is predicted that the corporate environmental responses level subject to the scrutiny of MSI regulations can be influenced. Therefore, it is hypothesized to companies operating in Brazil:

**H<sub>1b</sub>:** The environmental private multistakeholder regulation positively influences the environmental stakeholder interest prioritization.

Literature has a long time discussing the relationship between strict environmental regulation and firms' competitiveness, accordingly to the so-called question: "does it pay to been green?" (HART; AHUJA, 1996; ORSATO, 2006). It is seeing that regulation can improve organizational effectiveness in order to lower the cost of meeting it and generating absolute advantages to firms. In other words, it is believed that firms can benefit from properly environmental regulations that could be responded by innovativeness to enhance competitiveness in a win-win approach (HART; AHUJA, 1996; PORTER; VAN DER LINDE, 1995a, 1995b), overcoming the fallacious trade-off: ecology versus economy. In this way, environmental investments are welcome to society, but managers seek to realize opportunities to generate public benefits and corporate profits (ORSATO, 2006).

Based on institutionalism, corporates' behaviour inside in the same institutional pressures are more likely to implement an isomorphism behaviour (DELMAS; TOFFEL, 2004; KOLLMAN; PRAKASH, 2002). It can produce similar practices and structures in organizations inside a common institutional field (DIMAGGIO; POWELL, 1983). Governmental laws and regulations delivers a type of firms' coercive isomorphism behaviour in order to be respecting and complying with the environmental requirements (PEREZ-BATRES; MILLER; PISANI, 2011). Therefore, the governmental regulation produces coercive isomorphism behaviour which inspires homogenization on corporate practices (CUBILLA-MONTILLA et al., 2020; YUSSOF et al., 2019).

On the other hand, firms with higher environmental performance can support the development of private regulation initiatives such as multistakeholder ones to create entry barriers to competitors and secure advantage competitiveness (MCWILLIAMS; SIEGEL, 2011; MCWILLIAMS; SIEGEL; WRIGHT, 2006; MÜGGE, 2006). Multistakeholder initiatives standards can enhance reputation, competitive advantage, and buffer pressures (MCWILLIAMS; SIEGEL; WRIGHT, 2006; WRIGHT; RWABIZAMBUGA, 2006), but is costly for small firms, and transnational firms can use it as a barrier to the entrance of small firms (RAINES, 2003). It is believed that firms seek to associate in a private environmental regulation such as multistakeholder

initiatives as an attempt to obtain a type of differentiation to produce competitive advantage, based on that, it is hypothesized to companies operating in Brazil:

**H<sub>2</sub>:** The private environmental regulation has a greater positive influence than the governmental regulation on environmental stakeholder interest prioritization.

### 3. METHODOLOGICAL DESIGN

#### 3.1 Sample and data collection

The sample is composed of firms operating in Brazil that have disclosed reports accordingly to the GRI structure guidance. The year-base reports is 2018 because there were more reports for that year in the GRI database during the data collection, April 2020. It was chosen reports in standards GRI structure model because it is the most recent guidance to firms. By the end, following the criterias: a) report year-base: 2018; b) country: Brazil; c) report version: standards, the final research sample was composed of 102 firms.

#### 3.2 The Global Report Initiative (GRI)

Sustainability report by itself is still voluntary. There are no rules that require companies published it (PUTRI; HASTHORO; PUTRI, 2020). GRI is the most widespread CSR model worldwide (GARCIA-TOREA; FERNANDEZ-FEIJOO; DE LA CUESTA, 2020). GRI represents internationally standardized guidelines set of indicators based on qualitative and quantitative description of risks and impacts related to economic, social and environmental dimensions (SECCO et al., 2020). The GRI structure is appropriate to firms of different sizes, sectors and countries and it was launched in 2000 in its first version (G1), since then more four versions (G2, G3, G4 and standards) were proposed.

The GRI standard is composed by equally weighted disclosure indicators structured in three parts: 1) general disclosure - it presents contextual information about the organization such as organizational profile, governance, strategy, ethics and integrity, and stakeholder engagement; 2) management approach – define the requirements about the approach an organization uses to manage the topics; 3) performance indicators – it discloses the organizational economic, social and environmental performances (GRI, 2020). Accordingly to Clarkson et al. (2018) and Clarkson, Overekk and Chapple (2011) the GRI structure has soft and hard disclosures. The soft disclosures are unverifiable, and any firm could provide it because it does not reveal firms’ actual performance, while hard disclosures are objectively verifiable and assumed to be truthful.

#### 3.3 Research variables

##### 3.3.1 Dependent variable: environmental stakeholder interest met

In a GRI structure analysis, Clarkson et al. (2008) have defined the third part related to performances as hard or verifiable disclosures. Based on that, the GRI third part related to environmental performance indicators was considered to measure the environmental stakeholder interest prioritization. In Table 1 are represented the 32 indicators that have totalized 32 equally weighted disclosure environmental indicators.

Table 1 - Environmental performance indicators used to compose the dependent variable

Environmental stakeholder interests	Indicators codes	Number of indicators	Aspects covered
Biodiversity	304-1 to 304-4	4	Conservation areas, impacts on biodiversity, restoration and protection of habitats, impacts on endangered species

Climate change	305-1 to 305-7	7	Direct and indirect GHG emissions, reduction of GHG emissions, emission of other significant gases
Energy	302-1 to 302-5	5	Internal and external energy consumption, energy intensity, reduced energy consumption
Water	303-1 to 303-5	5	shared resource, water withdrawal, water discharge, water consumption
Renewable materials	301-1 to 301-3	3	volume and type of raw materials, use of raw materials, recovery of materials
Effluents e and waste	306-1 to 306-5	5	Water waste, contamination, hazardous waste
Environmental compliance	307-1	1	Significant fines and non-monetary sanctions for non-compliance with environmental laws and/or regulations
Supplier environmental assessment	308-1 to 308-2	2	Environmental criteria to screen suppliers; negative environmental impacts in the supply chain and actions taken

Source: GRI (2018)

To measure the environmental stakeholder interest met based on GRI was followed by previous studies. Some studies have used a binary variable to measure if an indicator was met based on its disclosure in firms reports (CLARKSON et al., 2008; CUBILLA-MONTILLA et al., 2020; FONDEVILA; MONEVA; SCARPELLINI, 2019). It was used two categories to verify if an indicator is or not is reported. The first category indicates that an indicator was disclosed in a firm's report, and the second one demonstrates that an indicator was not published. To verify the indicators disclosed by firms, a content analysis in report summaries have been done, where firms indicates its indicators revealed. Each indicator was analyzed one by one, assigning 1 to the disclosed indicators and 0 otherwise. Following the classification, based on the frequency to each indicator, it was composed a score to represent the dependent variable. The dependent variable represents the stakeholder environmental interests met level used in statistical hypothesis tests.

### 3.3.2 Independent variables

**Governmental regulation.** The industries responsible for higher pollution levels are subject to stricter and more environmental regulations (BANERJEE; LYER; KASHYAP, 2003; GARCÍA-MARCO; ZOUAGHI; SÁNCHEZ, 2020; KUNAPATARAWONG; MARTÍNEZ-ROS, 2016). Four more polluting sectors were identified in Brazil based on the Greenhouse Gas Emissions and Removal Estimation System (2018). The dependent variable is a binary one, indicating 1 if the firm is operating in *higher environmental governmentally regulated* sectors such as mine (2), chemicals (4), oil exploration (1), paper (5), metals (2), utilities, petroleum refining (CARNAHAN; AGARWAL; CAMPBELL, 2010), electricity production (17) and agriculture (9), and 0 otherwise.

**Private regulation.** As private regulation, it was considered two environmental multistakeholder initiatives (MSI). The MSIs chosed are Brazilian Business Council for Sustainable Development (CEBDS) and Brazil Climate, Forests and Agriculture Coalition (Brazil Coalition). The CEBDS was founded in 1997 being the representative in Brazil of World Business Council for Sustainable Development (WBCSD) and it is joined by 60 corporates groups responsible together for 45% of the Brazil GDP (CEBDS, 2020). Brazil Coalition was found in 2015 with a focus on the agribusiness sector, the most important economic activity from Brazil. Brazil Coalition is composed of 216 members through firms, industry associations, academia and environmental NGOs to articulate initiatives and solutions to promote the low carbon economy and

monitoring the implementation of these solutions (BRAZIL COALITION, 2020). The variable was composed based on a binary, indicating 1 if the firms is affiliated with at least one of these two MSI, and 0 otherwise. In the sample 86 firms are not associated to any MSI and 16 are associated at least to one MSI.

### 3.3.3 Control variables

Based on previous studies, three variables were used as controls. First, the firms size was represented by the natural logarithm of the full-time workers employed at the firms. This variable was used by Darnall, Henriques and Sadorsky (2010) have analyzed the firm's size influence in environmental strategy adoption and in Darnall, Seol and Sarkis (2009) study that has explored the relationship between firm performance and environmental regulations. Second, a binary variable for publicly listed firms in Brazil stock exchange has been applied such as in Griffin and Youm (2018). Publicly listed firms were indicated with 1, and 0 otherwise. Darnall, Henriques and Sadorsky (2010) have used this control variable because accordingly to them publicly trade firms differ significantly in their organizational structure independently of its size. Accordingly to Darnall and Edwards (2006) publicly traded and private-owned firms have varying levels of resources and capabilities available for developing environmental strategy. Third, externally assured report as a control variable through a dummy, indicating 1 for firms with an assured report by a third party, and 0 otherwise. A third part ensures some firms' reports. The external assurance might influence the likelihood of firms to produce more reliable disclosure and accurate environmental information (HAHN et al., 2015).

### 3.4 Data analysis

The data analysis has been done in Stata Statistical Software® version 15. It was applied an ordinary least squares (OLS) regression to test the hypotheses. To apply this method is necessary to verify the existence of multicollinearity and homoscedasticity of regression residuals. The Breusch-Pagan test indicated the existence of heteroscedasticity in the database, to solve this aspect, the model was estimated with robust standard errors (BREUSCH; PAGAN, 1979; FÁVERO; BELFIORE, 2017). The multicollinearity measured was made by the variance inflation factor (VIF) test with a result of a mean score less than 1.5 for all models, which is lower than the generally accepted threshold of 10 (ROBINSON; SCHUMACKER, 2009), indicating the data appropriateness. The hypotheses were tested through three equations. The first two equations aim to test the independent variables separately - Equation 1 conders the governmental regulation as the only independent variable. Equation 2 considers the private regulation as the only independent variable. Equation 3 uses both independent variables, governmental regulation and private regulation, in the same model:

$$\text{Equation 1: } EnvironmentalInterest = \beta_0 + \beta_1 GovReg + Size + ReportAssured + Listed + \varepsilon$$

$$\text{Equation 2: } EnvironmentalInterest = \beta_0 + \beta_1 PrivateReg + Size + ReportAssured + Listed + \varepsilon$$

$$\text{Equation 3: } EnvironmentalInterest = \beta_0 + \beta_1 GovReg + \beta_2 PrivateReg + Size + ReportAssured + Listed + \varepsilon$$

Where:

*EnvironmentalInterest* = stakeholder environmental interests met

$\beta_0$  = model linear coefficient

$\beta_1$  = linear model slope

*Size* = natural logarithm of full-time workers employed

*ReportAssured* = externally assured report



Listed = publicly listed firms in Brazil stock exchange

$\varepsilon$  = error

#### 4 RESULTS

Table 2 presents the descriptives statistics for each variable applied in the regression models to test the hypotheses. The same table demonstrates a positive and significant correlation between both the independent variables and the dependent variable (environmental interest). Governmental regulation coefficient (0.4423) is higher than the coefficient value (0.3732) presented to private regulation. None of the control variables have demonstrated correlation with environmental stakeholder interest met level.

Table 2 - Descriptive statistics and Correlations

<b>Descriptive statistics</b>	<b>Environmental interest</b>	<b>Governmental regulation</b>	<b>Private regulation</b>	<b>Size</b>	<b>Assured report</b>	<b>Listed</b>
Mean	97.843	0.3921	0.1568	85	0.2745	0.5588
Std. Dev.	75	0.4906	0.3654	17	17	0.4484
Minimum	0	0	0	26	0	0
Maximum	32	1	1	115	0	1
Obs	102	102	102	102	102	102
<b>Correlations</b>	<b>Environmental interest</b>	<b>Governmental regulation</b>	<b>Private regulation</b>	<b>Size</b>	<b>Assured report</b>	<b>Listed</b>
Environmental interest	1					
governmental regulation	0.4423***	1				
Private regulation	0.3732***	0.2057*	1			
Size	0.0435	-0.003	0.2708	1		
Report assured	0.1500	0.0909	-0.237	-0.1152	1	
Listed	0.1144	-0.1475	0.057	0.2967	-0.1171	1

Source: authors based on the research finds

Table 3 demonstrate the descriptive statistics for the environmental interests met individually. Accordingly to the averages presented in the table below, climate change (2.93) indicates to be the natural environment stakeholder interest most prioritized by the firms, followed by water (1.51) and energy (1.45) respectively. The environmental interest less prioritized by firms are renewable materials (0.39) and environmental compliance (0.42). The standard deviations vary considerably among the environmental interests, ranging from 0.4962 for environmental compliance to 2.19 for climate change.

Table 3 - Descriptive statistics for the environmental interests met

<b>Environmental stakeholder interests</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>Obs</b>
Biodiversity	0.9611	1.4136	0	4	102
Climate change	2.9313	2.1902	0	7	102
Energy	1.4509	1.4598	0	5	102
Water	1.5196	1.4052	0	5	102
Renewable materials	0.3921	0.8805	0	3	102
Effluents e and waste	1.4607	1.5837	0	5	102
Environmental compliance	0.4215	0.4962	0	1	102
Supplier environmental assessment	0.6372	0.8057	0	2	102

Source: authors based on the research finds

Table 4 present the regression models results. The models measured the influence of the governmental and private environmental regulation on environmental stakeholder interest met by firms. Model 1 is based only on the control variables. The model 1 was measured using robust errors for heteroscedasticity. The result for this model have presented no fit due to a low R-square value (3.7%) with no significance, indicating that none control variables alone have not significant influence on environmental interest met. Models 2 and 3 represent regressions applying the independent variables individually. To measure these models has needed the use of robust errors for heteroscedasticity. Model 2 presents the existence of governmental regulation positive influence on environmental interest met level. The model with governmental regulation alone has a significant influence at 1% with a coefficient of 6.44 with an R-square of 20.91%, showing a good adequation with the database. Model 3 has considered private regulation alone as an independent variable. The results demonstrate the positive influence of this regulatory approach on the environmental interest met level. The model presents an R-square of 17.87% and a positive coefficient equal to 8 both at 1% of significance.

Model 4 was measured with robust errors for heteroscedasticity. This model has considered all variables together. The model R-square is 29.44% which represents a good fit of the model. Both independent variables have demonstrated positive and significant coefficients on 1%. The coefficient to governmental regulation is 5.4209 and to private regulation is 6.3728, demonstrating a higher importance of private regulation on environmental interest met. Model 5 represents an OLS without the presence of outliers. The R-square to model 5 is the highest (33.49%), demonstrating a better fit. The model 5 results are in line with Model 4.

Table 4 - Regression models

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
Governmental regulation		6.4439*** (4.37)		5.4209*** (4.02)	5.1001*** (4.52)
Private regulation			8.0050*** (3.68)	6.3728** (3.21)	6.8329*** (4.24)
Listed	1.7745 (1.13)	0.7273 (0.50)	1.9495 (1.34)	1.0329 (0.76)	-0.8575 (-0.76)
Externally assured report	2.7274 (1.42)	2.0070 (1.18)	2.7135 (1.44)	2.1103 (1.28)	1.5449 (0.207)

Size	0.1192 (0.29)	0.1941 (0.47)	-0.3571 (-0.81)	-0.197 (-0.46)	0.3609 (0.10)
Constant	7.0746 (2.02)	4.6732 (1.32)	9.7829 (2.66)	7.2105 (1.97)	5.9481 (1.91)
Obs	102	102	102	102	102
R <sup>2</sup>	0.0373	0.2091***	0.1787***	0.2944***	0.3349***

t statistics in parentheses

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

Source: authors based on the research finds

#### 4.1 Hypothesis tests

Based on the results, H<sub>1a</sub> has support. Model 2 demonstrates the governmental regulation approach importance as the only independent variable to environmental interests prioritization. Model 4, with governmental and private regulations as independent variables, also shows a positive and significant coefficient to the governmental approach. Lastly, the Model 5 with governmental and private regulations as independent variables, and without outliers, also have presented a positive and significant coefficient to governmental environmental regulation. Therefore, in the Brazilian context, firms subject to a more stringent governmental regulation are more likely to prioritize the environmental interests.

The H<sub>1b</sub> also finds support in results. Model 3 presents a positive and significant coefficient to private regulation as the only independent variable to influence environmental interests prioritization. Model 4 considers both approaches governmental and private as independent variables have demonstrated a positive and significant coefficient to private regulation. Similarly, Model 5, without outliers, demonstrate a positive and significant coefficient to private regulation. Therefore, in the Brazilian context, firms associated with an environmental multistakeholder private regulation are more likely to prioritize the environmental interests.

The results provide support for H<sub>2</sub>. Model 2 and 3 associated have evidenced that private regulation, as the only independent variable, has presented a higher coefficient (8.0050) than the governmental regulation coefficient (6.4439). Model 4, considered the governmental and private regulations together, has shown a higher coefficient to private regulation (6.3728) compared to the governmental approach (5.4209). Model 5, without outliers, also reinforces the previous results.

Table 5 presents the model robustness test results and provides a complementary and a more in-depth understanding of the H<sub>2</sub>. The robustness analysis is based on the model measure for each environmental interests individually.

Table 5 – Regression models for each environmental interests

Environmental stakeholder interests	Governmental regulation		Private regulation	
	Beta	t statistics	Beta	t statistics
Biodiversity	0.9958***	-3.59	0.6081	-1.37
Climate change	1.2617**	3.08	2.1058***	3.75
Energy	0.4681	1.73	1.5772***	3.73
Water	0.9716**	3.54	0.8683**	2.31
Renewable materials	0.1009	-0.57	-0.1397	0.50

Effluents and waste	1.1368**	3.54	0.4275	0.97
Environmental compliance	0.2062*	2.03	0.2200	1.58
Supplier environmental assessment	0.2795	1.72	0.4307	1.94

Source: authors based on the research finds

Results in Table 5 provides evidences to confirm the previous finds. For biodiversity, effluents and waste, and environmental compliance interests, only the governmental regulation approach has a positive and significant influence. For energy interest, only the private regulation presented a positive and significant influence. For climate change and water, both governmental and private regulation approaches have a positive and significant influence in its met attendance. Finally, for renewable materials and supplier environmental assessment, no regulation approach has demonstrated influence. For both more prioritized environmental interests (see Table3), climate change and energy, the private regulation approach has presented a higher positive and significant coefficient which reinforce the support to H<sub>2</sub>. Meantime, for biodiversity, water, and effluents and waste, the governmental regulation has presented a higher positive and significant coefficient. Based on the above results (Table 5), what is possible to infer is: governmental and private regulations are more or less relevant to different types of environmental interests met, and for some, the regulation approaches are not influential.

## 5 DISCUSSION AND CONCLUSION

This study provides a new light on this line of study, offering a step forward that is, beyond analysis considering regulation as only governmental or public regulation, the paper offers an analysis of the private regulation, considering the two approaches influence individually. This analysis offers an approach comparison that allows an argument ratification that is: environment interest prioritization is not just about compliance with governmental regulation concern, more than it, this phenomenon is a strategic issue, at least for firms operation in Brazil. When comparing the approaches, the paper offers another insight that is indicative of governmental and private regulation importance for specific types of environmental interests.

### A strategic issue

Although the governmental and private regulation influence environmental stakeholder interest met level, generally, the private approach has indicated had more influence. Governmental impact over firms lead to a type of isomorphic behaviour and similar practices which deliver to similar organizational practices (DELMAS; TOFFEL, 2004; DIMAGGIO; POWELL, 1983) while private regulations such as multistakeholder could produce barriers to competitors and competitive advantages (MCWILLIAMS; SIEGEL, 2011; MCWILLIAMS; SIEGEL; WRIGHT, 2006; MÜGGE, 2006). The second hypothesis result provides an insight in relation of the individual influence of the private regulation. The greater influence of private regulation indicates that firms might associate in multistakeholder initiatives in order to produce a differentiation of its competitors that are subject to the same governmental environmental regulation.

Porter and Linde's (1995) hypothesis predicts that strict environmental regulation provides a positive influence that builds better effectiveness and innovations that deliver to competitive advantage. Meanwhile, there was no differentiation and comparison between the two possible regulation approaches – public and private. Since that public regulation tends to create homogeneity, the private regulations indicates to be an attempt to create differentiation. Based on the results, the private regulations have presented a higher influence as well as to the most prioritized environmental interests – climate change and energy, both are hot topics in

environmental agenda. The Porter and Linde's (1995) hypothesis consider that regulation could reduce pollution and increased efficiency, for example, through better use of energy resources, offsetting the costs of improving environmental impact what will enhance competitiveness based on cost advantages (HART, 1997; HART; AHUJA, 1996). The results are in line with it, the GRI indicators related to both most prioritized environmental interests are related to the reduction of pollutants emissions and energy use, in other words, effectiveness that might deliver competitiveness. It reinforces the understanding that the more significant influence of private regulation is due to its possible relation to competitive advantage. It indicates that environmental prioritization interests represents a strategic issue in a Porter and Linde's (1995) approach that seeks to overcome the fallacious trade-off ecology versus economy.

### **Contribution and future researches**

The results allow possibilities for future researches. The results have demonstrated that the firms' responses to environment represents either a strategic issue, in other words, the strategic importance to respond to the stakeholder interests is higher influential than the coercive power represented by the governmental regulation. The strategic importance is either strength aligned to specific types of environmental interests that are possible sources to competitive advantage. Theoretically, Harrison and Bosse (2013) have provided guidance to managers value allocation across the stakeholders based on their power and strategic importance to firms performance. Empirically, Boaventura et al. (2019) have validated the argument that the stakeholder strategic importance has more influence than the power to value distribution. However, both of these previous studies have not considered the environment interests in firms value distribution. When considering the environment and specific interests that compose its utility function, the results presented in this paper represents a step forward in this discussion, expanding it to an essential stakeholder.

Either, the results presented here are in line with Boaventura et al. (2019) conclusions for firms operating in Brazil that have completed an IPO between 2003 and 2017, which have demonstrated the stakeholder higher strategic importance to value distribution between stakeholders. The finds are even more reinforced when considering that firms subject to environmental regulations are either more dependent on natural resources provided by the environment. It indicates the firms' strategic dependence concerning the environment might explain the higher value distribution to the environment and its interests between these type of firms. These results deserve a more in-depth analysis to overcome the limitation of this research. In this way, there is a path to future studies that might consider the justifications to why some environmental concerns are more or less influenced by regulation approaches and discovering what else might affect this. It is interesting to verify if the different prioritization across the environmental interests might be explained because some firms are more or less publicly or privately regulated to some types of environmental interests. Finally, future studies might consider a cross-country research and a long-range period analysis to better shed lines on this phenomenon.

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