

Environmental Disclosure in Brazilian Public Universities

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Abstract: Higher Education Institutions (HEIs) are planning their actions with a focus on sustainability in order to stimulate the Sustainable Development Goals (SDGs). Therefore, this study aimed to identify the sustainable practices of Brazilian public universities based on the disclosure of information from the 2018 Management Report. The Management Reports of 63 public universities were analyzed. Therefore, as universities have environmental actions and practices, however, they need to align with the 2030 Agenda. The analysis of Environmental Evidence helps to understand the 'green' practices of universities and allows organizations to be a reference for other universities that wish to implement practices environmental.

Keywords: Sustainability; Brazilian; public universities; Disclosure

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Introduction

The current context compels governments, companies, and society to turn their eyes to an adequate management and use of environmental resources. Sustainability must encompass a holistic view and consider education as a critical point for the culture of society in order to raise awareness on the theme. Universities are introducing sustainable practices and adapting their routines to contemplate the premises of sustainability, although most higher education institutions (HEIs) lag behind companies in terms of sustainability, and managers need to become more proactive when integrating sustainable development (SD) as part of their system and discard old paradigms (Lozano et al., 2013). This change requires a new way of outlining strategies that add value to educational institutions.

In this context, organizations can disclose environmental information to improve their image, show themselves as responsible to society, and meet the expectations of their stakeholders (Deegan, Rankin & Tobin, 2002). According to Adams (2013), little attention has been given to the university sector in the literature regarding sustainability and social responsibility reports. Moreover, environmental information disclosure has become more flexible and is gradually accepted by the government and those interested in the information (Ren et al., 2020). Furthermore, Brazilian legislation encourages the disclosure of voluntary (additional) information, although MRs have low voluntary disclosure even if they are geared to positive aspects (Zorzal, 2015). Additionally, O'Donovan (2002) reported the importance of the annual report as a source of environmental information.

Universities that have a sustainability report can design their operations in a sustainable manner and contribute to the economic well-being of their country and the sustainable development of society (Sassen & Azizi, 2018). Ceulemans, Lozano, & Alonso-Almeida (2015) emphasized that sustainability reports in HEIs are still in their

initial stages. In addition, the commitment to achieving the SDGs by 2030 added a sense of urgency to conduct quality research on SD (Leal Filho et al., 2018a).

Higher education institutions must practice good social responsibility in order to be seen as models that identify innovative sustainability practices (Cortese, 2005), and there is an expectation that universities will place much emphasis on sustainability reporting to meet the needs of stakeholders (Gamage & e Sciuilli, 2016). Considering the importance of universities as drivers of knowledge, which should serve as models for other organizations, this study aimed to identify the sustainable practices of Brazilian public universities based on the disclosure of information of the 2018 Management Report. The name Higher Education Institution (HEI) refers to Brazilian public universities in this study to facilitate understanding.

Therefore, this study sought to contribute to the academic community, considering the lack of research on sustainable practices in universities in the literature (Velazques et al., 2006) and the education sector about sustainability reporting (Adams, 2013). Moreover, the results of the study allow organizations to be a model/reference to others that wish to expand their practices of environmental management. Additionally, sustainable development policies are valuable tools to show the HEI's commitment to sustainability and help implement sustainability training (Leal Filho et al., 2018b).

In addition to the introduction, the present study is organized into five sections. Section 2 provides a literature review on sustainable universities and sustainable practices implemented in HEIs, and section 3 presents the method used in the study. In section 4, the results are shown, followed by the final considerations in section 5, and lastly, the references.

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Sustainability in public universities

The conservation of natural resources for future generations is a global concern. Sustainable development is the process of maintaining the number of resources used by society for the present needs at a rate that will not affect future generations (Güney, 2019). According to the Brundtland Report - Our Common Future (WCED, 1987), sustainable development means meeting the needs of the present without compromising future generations' ability to meet their own needs. For Barter and Russell (2012), the concept of sustainable development does not refer to saving nature but to internalizing strategies, thus adding new resources to allow economic growth and prosperity shared by everyone. Feil and Schreiber (2017) reported that sustainable development is characterized by being a process of change that affects the community, as it equips itself to a society based on the sustainability tripod formed by the social, economic, and environmental pillars.

According to Velazquez et al. (2006), the definition of sustainability is complex and multidimensional. Sustainability cannot be seen in isolation since it needs this interdisciplinarity to understand a given reality (Feil & Schreiber, 2017). Sustainability focuses on the concern of the effects of the present actions on future ecosystems, societies, and environments. It can be understood as the principle of ensuring that the current behavior does not interfere in future generations' social, environmental, and economic choices (Ávila, Madruga, & Beuron, 2016). The 2030 Agenda appears to reinforce the HEI's commitment to sustainable development, and adopting the SDG approach in governance allows sustainable management strategies to be implemented by universities (Paletta & Bonoli, 2019). Nonetheless, the study developed by Caiado et al. (2018) highlighted the challenges of implementing the 2030 Agenda and suggested a management model for the 17 objectives in favor of sustainable development innovations. The critical points to achieve the SDGs are investments in education, political leadership and governance, integrated global commitment and partnerships, innovative solutions, and aggregated and reliable indicators. The authors then proposed guidelines to overcome these barriers, including integrating inter and transdisciplinarity knowledge.

Higher education institutions play a prominent part in technological development, preparing students and disseminating knowledge that can and should be used to create a sustainable society based on awareness at all organizational levels (Tauchen & Brandli, 2006). Velazquez et al. (2006) defined sustainable universities as higher education institutions, as a whole or in part, which involves and develops, at regional or global levels, the reduction of adverse effects generated in the use of its resources to fulfill its teaching, research, dissemination, and partnership functions, helping society to transition into sustainable lifestyles.

Furthermore, HEIs can contribute substantially to strengthening sustainable development by integrating sustainability issues with research, extension projects, education, and science-society interaction, encouraging reflective thinking and supporting students to face problems at a global scale (Körffgen et al., 2018). Although universities face increasing pressure to use their resources and consider SD

as part of their processes, many are reluctant to revise their business models and incorporate the necessary changes (Ávila et al., 2017). The authors add that the necessary investments are seen as barriers, and environmental and economic performance benefits are neglected. Regarding environmental disclosure, the literature suggests that it is a valuable practice to improve the organization's reputation and financial performance and establish a dialogue with stakeholders that improve environmental performance (Longoni & Cagliano, 2018). In Brazil, there are barriers inherent to the process of incorporating sustainability and cultural change, and to overcome the challenges, they must realize the importance of their role in society regarding sustainable development by educating leaders and improving knowledge in order to create an understanding of institutional, cultural, and planned sustainability (Brandli et al., 2015).

Implementing a sustainable university model is a process of continuous improvement of environmental, social, and economic performance that must be done by incremental steps, requiring extraordinary efforts from members of the university community (Velazquez et al., 2006). Tauchen and Brandli (2006) reported two currents of SD in universities: (1) the educational issue with influence on the qualification of academics in a way that includes the search for environmental issues and (2) initiatives related to implementing a sustainable management system in its organizational structure to serve as a practical example of sustainability. Curriculum change and innovation through issues related to sustainability and the teaching of skills, abilities and motivation to understand sustainability objectives were some actions described by Ruiz-Mallén and Heras (2020).

Velazquez et al. (2006) outlined a structure composed of four phases in a strategic process, in which strategies and practices carried out by the key actors of sustainability initiatives in HEIs are analyzed. According to the authors, the phases are: (1) to develop the vision of sustainability in the university, (2) the mission, (3) sustainability committee to create policies and goals, and (4) sustainability strategies. Thomasshow (2014) proposed nine elements for a sustainable campus divided into three major categories: infrastructure (energy, materials, and food), community (governance, investment, and well-being), and learning (curriculum, interpretation, and aesthetics).

Several factors influence the implementation of sustainability practices in universities: public or private institutions, size, organization's leadership in sustainability, and political orientation (Jorge et al., 2015). According to Körffgen et al. (2018), HEIs can model sustainability practices for society by implementing sustainable measures on their campus, becoming a model for sustainability effectiveness. According to the authors, HEIs can help implement the SDGs through:

- Real-world research focused on a specific problem;
- Critically reflect the SDGs and associated measures;
- Educate future decision-makers, prompting criticism and thought systems;
- Strengthen relations at the political-science-society levels;
- Offer examples of the best practices for SD on campus.

Clugtons and Clader (2000) suggested several parameters that indicate whether the university is on the path to sustainability, namely: inclusion of an explicit commitment regarding sustainability in the organization's mission, vision, and strategic objectives; incorporation of the concept of sustainability in teaching (academic disciplines and research and development activities); encouraging students to reflect critically on environmental and social problems; and inclusion of sustainable practices and policies and partnerships for sustainability in HEIs. On-campus experiences on university campuses are important for integrating the community through working groups and sustainable development policies (Paletta & Bonoli, 2019).

Sustainable practices aimed at maximizing energy efficiency, reducing waste, environmentally responsible purchases, integrating environmental knowledge with disciplines, and creating an environmental student center are conditions for a HEI to be considered a sustainable organization (Bakker, 2000).

In the search of Moura-Leite, Jesus Lopes & Yamazaki (2022) only 25% of the FUs had a current PA and 15% published a report for the years 2020 or 2021. Furthermore, the most commonly found mandatory issue to be addressed was electricity, and the least frequent was sustainable procurement and contracting. In fact, Hall et al. (2014) evidenced the need to expand environmental management practices in tender processes in universities.

Zhao & Zou (2015) conclude that Tsinghua University is very influential with regard to the development of green universities in China, and employs one principle (green university) and three dimensions (green education, green research and green campus) to frame its green university initiative. The University of Florence has integrated sustainability reporting into its accountability system, but full integration into strategic planning is still lacking, however the integration of sustainability reporting within the overall management of a higher education institution remains still hard (Fissi et al., 2021).

In this context, the establishment of a sustainability committee represented by all the main actors of the university community facilitates the tasks of creating and establishing policies, objectives, and broad goals for the entire campus, being perceived as the main level of decision (Velazquez et al., 2006). The authors add that the committee coordinates initiatives, avoids overlapping efforts, obtains funds, and guarantees the effectiveness of implemented policies. As a way of assessing sustainability, the GreenMetric World University tool was created in 2010 by the University of Indonesia. It is configured in a world ranking of 'green' universities and evaluates the institution's commitment to all aspects of sustainability and used as an instrument to support the university's SD (Puertas & Marti, 2019). The GreenMetric survey has a significant impact on the governance processes of the universities' sustainability strategy (Paletta & Bonoli, 2019).

Fonseca et al. (2011) and Sassen and Azizi (2018) presented the sustainability reports of Canadian universities, Moggi (2019) reported the social and environmental disclosure of Italian universities, Zorzal (2015) analyzed the level of environmental disclosure in manage-

ment reports in five Brazilian federal universities, Sanchez, Bolívar, & Hernandez (2021) investigated the voluntary corporate social responsibility information released by leading universities in the United States, and Gamage & Sciulli (2016) addressed the information in reports of Australian universities.

Regarding the level of environmental disclosure, Zorzal (2015) analyzed the MRs of five Brazilian universities, four of which reached the medium-high level and one was classified at the medium level (University of Brasília), which had the highest score in the environmental disclosure.

Thus, the "green university" implements sustainability in all different dimensions of its activity as institutional framework, campus operations, teaching, research, community engagement, accountability and reporting (Fissi, Romolini, Gori & Contri).

Methodological procedures

The present study aims to identify the sustainable practices of the Brazilian Federal Universities using information disclosed by the Management Report for the financial year of 2018. A descriptive study was carried out (Sampieri, Collado, & Lucio, 2013) with qualitative and quantitative focus. The data collection was made operational based on the documentary analysis of the management reports obtained on the Federal Court of Auditors' (TCU) website and is based on the 2018 financial year. For data analysis, content analysis (Bardin, 2016) and descriptive statistics were used (Sampieri, Collado, & Lucio, 2013).

In addition to complying with environmental regulations, public organizations present the Management Report (MR) which, despite not being a sustainability report, is an instrument of transparency and environmental management disclosure. Moreover, MRs are annually published and a normative requirement of all government entities, constituting one of the essential parts in rendering accounts for the Federal Court of Auditors (Bairral & Silva, 2015).

The MR was used as a data source since legislation requires all HEIs to create it in the same manner, as it is a piece that integrates the accountability process (Zorzal, 2015). In addition, these are secondary data that have already been validated by the Federal Court of Accounts. We opted to analyze HEIs due to their political, economic, and social relevance, which depend on public resources that mostly come from taxes paid by society; therefore, the transparency of these institutions is essential to demonstrate their responsibilities (Zorzal, 2015). Universities play an essential role in countries in socio-economic development (Puertas & Marti, 2019) and can contribute substantially to the SD (Körfggen et al., 2018; Amaral, Martins, & Gouveia, 2015; Tauchen & Brandli, 2006).

After consulting the National Registry of Courses and Institutions of Higher Education (e-MEC Registry)² of the Ministry of Education on May 18, 2020, the study population comprises 68 HEIs, although the following were excluded from the analysis: Federal University Agreste de Pernambuco (UFAPE), Federal University of Catalão (UFCAT), Federal University of Delta do Parnaíba (UFDPAR), Federal University

of Jataí (UFJ), and Federal University of Rondonópolis (UFR), which were conceived between the years of 2018 and 2019 and did not have the MR for the 2018 financial year. Hence, the sample comprised 63

Brazilian public universities (Appendix A), which presented the MR on the website of the Federal Court of Auditors. Through content analysis (Bardin, 2016), the analysis items were adopted (Table 1).

Table 1: Analysis items

Item	Description	Maximum Score
1	Energy efficiency practices	1
2	Water efficiency practices	1
3	Transport and transportation (urban mobility, consumption control, fuel type, bike rack)	1
4	Separation of recyclable waste and/or allocate them to waste recycling sites	1
5	Adoption of environmental sustainability criteria in the acquisition of goods and contracting of services or construction work	1
6	Construction waste management	1
7	Hazardous waste management	1
8	Composting	1
9	Global climate change	1
10	Partnerships, councils, forums, groups, boards, coordinations, commissions, etc.	1
11	Setting environmental goals and targets	1
12	Compliance with environmental legislation and PU environmental certifications	1
13	Sustainable logistics management plan	1
14	Information about awards and participation in environmental indices (sustainable logistics plan, performance indicator, among others)	1
15	Adherence to sustainability management programs	1
16	Environmental education internally and/or in the community (training, extension projects, and events)	1
17	Historical evolution of electricity and water consumption, in monetary and quantitative values, and/or the savings generated produced by sustainable practices	1
18	Reverse logistics	1
19	Refers to the 2030 Agenda	1
Total		19

Source: based on Velazquez et al. (2006) and Zorzal (2015).

The items shown in Table 1 were analyzed for each Brazilian public university in the 2018 report in which the scores of 0 = does not comply and 1 = does comply. The maximum total score for the HEI is 19 points. This article contributes to the literature on environmental disclosure, as it analyzes aspects not studied in Brazilian universities, considering the importance of disclosing environmental information in greater detail to stakeholders.

Results

According to the disclosure of information in the management report, it was possible to verify the percentage of compliance for each item analyzed (Table 2).

Twelve HEIs were cited in the GreenMetric Ranking (2018), demonstrating the positive effects of inserting sustainable practices

within the institution (Paletta & Bonoli, 2019), as shown below:

Table 3 - Brazilian public universities in the GreenMetric ranking

Ranking Position	PU
38th	Federal University of Lavras - UFLA
220th	Federal University of Viçosa - UFV
311th	Federal University of Triângulo Mineiro - UFTM
350th	Federal University of Rio Grande do Sul - UFRGS
352th	Federal University of Rio de Janeiro - UFRJ
378th	Federal University of Santa Catarina - UFSC
411th	Federal University of Itajubá - UNIFEI
458th	Federal University of Alfenas - UNIFAL
497th	Federal University of Fluminense - UFF
591th	Federal University of São Paulo - UNIFESP
600th	Federal University of ABC - UFABC
684th	Federal University of Pernambuco - UFPE

Source: GreenMetric Ranking (2018).

Discussion

The disclosure of environmental information is a way of exposing the organization's practices or making information public to improve its image and credibility (Deegan, Rankin & Tobin, 2002). When there are positive effects on environmental and financial performance, environmental disclosure practices can serve as evidence for the sustainability business case (Longoni & Cagliano, 2018).

Notably, the practices addressed in this study are directly related to the Sustainable Development Goals (UN, 2015), as shown in Table 2. In this sense, these actions must be disclosed in the MR to improve sustainable management strategies and contribute to implementing the 2030 Agenda (Paletta & Bonoli, 2019). We observed that 78% of universities have energy efficiency practices, and 89% adopt environmental criteria in the tender processes, characterizing a sustainable HEI (Bakker, 2000). Clugtons and Clader (2000) and Caiado et al. (2018) suggested the inclusion of policies and partnerships in support of sustainability, highlighting the importance of partnerships, councils, forums, nuclei, boards, coordinations, and environmental commissions, which was presented by 83% of the analyzed HEIs. In addition, Velazquez et al. (2006) highlighted that forming a committee to coordinate sustainable initiatives is also important.

Investing in environmental education (83%), extension projects, research, training, and events, which are highlighted in topic 16, constitute a form of incentive to adopt sustainable practices both internally

and externally (e.g., society, companies, and other public organizations), contributing to substantially strengthening sustainable development (Körffgen et al., 2018). Debated worldwide, the 2030 Agenda was mentioned by only 19% of the universities analyzed. Moreover, implementing the 2030 Agenda requires engagement, partnerships, and investments (Caiado et al., 2018). To this end, universities need to highlight their actions by expanding environmental disclosure and aligning objectives and goals with the main actors in this process. It is worth mentioning that all the items analyzed in this study play a crucial role in reaching a sustainable university aligned with the SDGs. Nevertheless, little engagement may compromise the results of the entire nation since universities are essential for raising awareness and encouraging sustainability according to the literature.

The universities with the highest scores (UNB and UFRN) were not included in the GreenMetric ranking (2018). On the other hand, UFSC, UFTM, UFV, UNIFEI, and UNIFAL were listed by GreenMetric but had low scores (compared to the other HEIs) in evaluating environmental practices (Figure 1). Thus, this information leads us to believe that many environmental practices are not evidenced by managers, consequently compromising the organization's transparency and preventing good practices from spreading to other universities that wish to use existing models. Furthermore, the results confirm that the organization's performance in relation to sustainable aspects is not related to the fact of evidencing practices. The main research results are summarized in Table 4.

Table 4 - Summary of results

Main Results	
Practices with a higher % of disclosure	Adopting environmental sustainability criteria in the acquisition of goods and the contracting of services or construction work; setting environmental goals and targets; partnerships, councils, forums, groups, boards, coordinations, commissions, etc., environmental issues; environmental education internally and/or in the community (training, extension projects, and events); separation of discarded recyclable waste and/or allocation of waste to recycling sites.
HEIs with greater environmental disclosure for the analyzed items	UNB, UFRN, UFLA, UFPB, UFCSPA, UFRGS, and UFRPE.

Source: research results (2019).

Therefore, the relevance of environmental disclosure is vital to demonstrate the actions implemented and the primary reflexes in organizations and reaffirm the role of universities in sustainable development in order to face global challenges (Tauchen & Brandli, 2006; Körfgén et al., 2018). Furthermore, the results demonstrate the importance of integrating sustainability into university management reports, as indicated in the literature.

Final Considerations

This study demonstrated the behavior of environmental disclosure of Brazilian public universities based on the management report for the 2018 financial year. In addition to transparent management, organizations can expand or reduce information to seek legitimacy in society and stakeholders. In this way, the analyzed universities may present sustainable practices and not disclose them in the MR.

The results show that the analyzed HEIs adopt environmental criteria in the tender processes (89%); have energy efficiency practices (78%); have environmental partnerships, councils, forums, groups, boards, coordinations, and/or commissions (83%); present environmental goals and objectives (84%), and have actions for internal and/or community environmental education (83%). Hence, some actions are taken due to the legal requirement, while other issues are still incipient in public organizations analyzed. Furthermore, the study analyzed the environmental disclosure, and it is emphasized that the fact that the HEI discloses the actions and practices that are being carried out does not mean they are linked to the level of environmental, social, and economic performance.

Nonetheless, no university presented evidence on global climate change, and only 14% referred to the 2030 Agenda, with the Federal University of Grande Dourados having performed extension actions according to the SDGs. Notably, the Federal University of Rio Grande do Norte was ranked among the ten finalists of the 2018 Brazilian SDG Award.

Therefore, the data reported herein indicate that despite low disclosure rates, there are actions of the 2030 Agenda being implemented and HEIs that stand out in terms of inserting sustainable practices at the national level, encouraging and contributing to achieving these goals. From the results, it can be concluded that universities have environmental actions and practices, however, they need to align them with

the UN’s 2030 Agenda, an aspect confirmed by the percentage of universities that mention the referred Agenda in their reports. There are environmental practices not evidenced by managers that compromise transparency. The organization’s performance in relation to sustainable aspects is not related to the disclosure of practices.

As for the study’s limitations, the use of only one source of evidence (management report), the analysis of the researchers in the data collection, and being a descriptive study are notable constraints. This study sought to contribute to the literature regarding environmental disclosure and the managers of public universities and creators of public policies since the evidence can serve as a model for organizations that wish to insert environmental practices or adapt to existent actions.

Implications for theory

It should be noted that the Management Report aggregates management information, and environmental disclosure is only part of the document; therefore, some universities may implement environmental practices, projects, and actions and not provide evidence. However, the low level of disclosure may be related to the search for legitimacy, in which only the content that is convenient for the organization is evident in order to meet the expectations of stakeholders (Deegan, Rankin & Tobin, 2002).

It is suggested that future research qualitatively assess the effectiveness of environmental practices informed by HEIs in management reports and their financial impact by focusing on performance, considering that universities depend on public resources for the maintenance of their activities. Investigating environmental disclosure using the theoretical lens of the Theory of Legitimacy and establishing relationships with impression management may also be a possibility for future research.

Future studies may analyze environmental disclosure from the perspective of the Triple Bottom Line, with emphasis on the social dimension. The comparison between public and private higher education institutions can explain some determinants of voluntary disclosure. The stakeholder theory can support the analysis of environmental disclosure, considering that many universities can disclose their practices only for legitimacy. Another relevant aspect is to verify with the stakeholders of these institutions, the main disclosure mechanisms

and their impacts on the way of communicating practices. Mixed methods can be used to analyze environmental, economic and social performance considering the management of public resources.

Implications decision-makers

It should be noted that institutions can carry out actions and practices and not show them in their reports. The study proves to be timely for the educational context, since the UN Agenda 2030 places public universities as central actors in the process of implementing the Sustainable Development Goals. Thus, the results of the study can contribute to the implementation of environmental transparency indicators and encourage the alignment of actions and practices of higher education institutions with the SDGs of the 2030 Agenda.

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¹ The TCU, as an external control body assisting the Brazilian Congress, must legally issue rules and guidelines on the annual accountability of public administrators (BRAZIL, 2021). Available at: <<https://portal.tcu.gov.br/contas/contas-e-relatorios-de-gestao/normas-gerais-para-as-prestacoes-de-contas>>

² Available at: <<https://emec.mec.gov.br/>>. Accessed on: 18 May. 2020.

