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**Estratégias e práticas para operacionalização do Plano de Logística Sustentável de uma Instituição de Ensino Superior**

*Strategies and practices to operate the Sustainable Logistics Plan of a Higher Education Institution*

*Estrategias y prácticas para operar el Plan de Logística Sostenible de una Institución de Educación Superior*

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**PALAVRAS-CHAVE**

Sustentabilidade. Plano de Logística Sustentável. Instituições de Ensino Superior.

**Resumo:** O presente estudo visou analisar estratégias e práticas para operacionalização do Plano de Logística Sustentável em uma instituição pública de ensino superior. Foi realizado um estudo de natureza exploratório do tipo qualitativo e teve o Instituto Federal de Santa Catarina (IFSC) como unidade de análise. Os dados primários foram obtidos a partir da aplicação de 36 entrevistas. Esses dados foram analisados por meio da técnica análise de conteúdo. Os resultados obtidos apontaram que há uma interligação entre a Sustentabilidade e o Plano de Logística Sustentável (PLS) do IFSC. As principais práticas adotadas no IFSC para operacionalizar o PLS são gestão de resíduos e controle do consumo de água e energia. Por sua vez, as principais estratégias utilizadas pelo IFSC para aplicar o PLS são ações de conscientização e ações de comunicação/divulgação. Verificou-se que a instituição vem deixando o seu plano de sustentabilidade em segundo plano, já que o último plano publicado foi em 2017. Além disso, no seu portal, não há nenhuma informação sobre ações e/ou planos de sustentabilidade. Os resultados também apontaram que é necessário,

em uma IES com muitos campi, uma gestão central que dê apoio e suporte para esses campi. Com isso, a aplicação do plano será mais eficiente e eficaz.

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**KEYWORDS**

Sustainability.  
Sustainable logistics  
plan. Higher education  
institutions.

**Abstract:** *The present study aimed to analyze strategies and practices for the operationalization of the Sustainable Logistics Plan within a public institution of higher education. An exploratory qualitative study was conducted, with the Federal Institute of Santa Catarina (IFSC) as the unit of analysis. Primary data were obtained through the administration of 36 interviews. These data were analyzed using content analysis technique. The results indicated an interconnection between Sustainability and the Sustainable Logistics Plan (SLP) at IFSC. The main practices adopted at IFSC to operationalize the SLP include waste management and control of water and energy consumption. In turn, the main strategies utilized by IFSC to implement the SLP are awareness-raising actions and communication/dissemination activities. It was found that the institution has been relegating its sustainability plan to a secondary position, as the last plan published was in 2017. Additionally, there is no information regarding sustainability actions or plans on its website. The results also highlighted the necessity, within an institution of higher education with multiple campuses, for centralized management that provides support and assistance to these campuses. This would lead to a more efficient and effective implementation of the plan.*

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**PALABRAS CLAVE**

Sustentabilidad. Plan de  
Logística Sostenible.  
Instituciones de educación  
superior.

**Resumen:** El presente estudio tuvo como objetivo analizar estrategias y prácticas para la operacionalización del Plan de Logística Sostenible en una institución pública de educación superior. Se llevó a cabo un estudio de naturaleza exploratoria de tipo cualitativo y se tomó al Instituto Federal de Santa Catarina (IFSC) como unidad de análisis. Los datos primarios se obtuvieron a través de la realización de 36 entrevistas. Estos datos fueron analizados mediante la técnica de análisis de contenido. Los resultados obtenidos señalaron que existe una interconexión entre la Sostenibilidad y el Plan de Logística Sostenible (PLS) del IFSC. Las principales prácticas adoptadas en el IFSC para operacionalizar el PLS son la gestión de residuos y el control del consumo de agua y energía. A su vez, las principales estrategias utilizadas por el IFSC para aplicar el PLS son acciones de concienciación y acciones de comunicación/divulgación. Se observó que la institución ha dejado su plan de sostenibilidad en segundo plano, ya que el último plan publicado fue en 2017. Además, en su portal no hay ninguna información sobre acciones y/o planes de sostenibilidad. Los resultados también señalaron que es necesario, en una IES con muchos campus, una gestión central que brinde apoyo y soporte para estos campus. Con esto, la aplicación del plan será más eficiente y efectiva.

## Introduction

One of the greatest global objectives in recent years has been the pursuit of sustainable development (Gazzoni, Scherer, Santos, Hahn & Moura Carpes, 2016). Consequently, sustainability has been a topic of discussion among various institutions such as universities, businesses, public bodies, and others (Santa, Pfitsche & Rocha, 2017). In order to incorporate sustainability actions, these stakeholders need to reinvent themselves and establish strategies for resource use that consciously interfere minimally in people's daily lives and do not compromise the environment (Goedert, Santos & Abreu, 2018).

The federal government, as one of these stakeholders, has sought to devise strategies and implement sustainability actions in a wide range of public sector activities. To this end, it has issued regulations addressing the topic and developed sustainable programs and projects (Maldonado, 2016). In this direction, the Sustainable Logistics Management Plan (PLS) was created. The PLS constitutes a mandatory socio-environmental management tool for all federal public sector bodies and entities (Brasil, 2012a).

Federal higher education institutions (IFES), as public bodies, are required to have a PLS. Furthermore, due to their primary role in generating knowledge and shaping future leaders, Higher Education Institutions (HEIs) as a whole have the responsibility to set good examples of socio-environmental responsibility (Araújo, Freitas & Rocha, 2017; White, 2014). These good examples can be demonstrated through the implementation of sustainability practices established in the PLS. Consequently, HEIs will be able to change the culture, not only of their students, but of the entire academic community, towards a culture of sustainability (Araújo et al., 2017).

Despite the importance of the PLS for organizations, few studies, such as Berchin (2017), Choi, Oh, Kang, and Lutzenhiser (2017), Maldonado (2016), Moreira (2018), Pereira and Barbosa (2018), Petrassi, Van Bellen and Cardoso

(2016), Santa et al. (2017), and Silva, Omena, Cavalcante, and Silva (2016) have focused on examining the sustainability plan of an HEI.

Given this context, the aim of the present study is to analyse strategies and practices for the operationalization of the PLS in an HEI. To achieve this objective, specific aims were outlined: a) to describe the strategies adopted by the HEI for the operationalization of the PLS and the barriers faced; and b) to examine the practices associated with the operationalization of the PLS.

## Theoretical Elements of Research

### Sustainable Logistics Plan (SLP)

Several programmes and policies have been established in Brazil for the implementation of sustainability. Among these, the Environmental Agenda in Public Administration (A3P) and the Sustainable Logistics Plan (SLP) were created (Moreira, 2018). The SLP was established by the federal government through Decree No. 7,746, dated June 5, 2012. This decree, in its Article 4, imposed sustainability criteria and practices that should be followed and implemented by all federal public agencies, including federal institutions of higher education (IFES) (Brasil, 2012b).

However, it was with the promulgation of Normative Instruction No. 10, dated November 12, 2012, by the Secretariat of Logistics and Information Technology, that rules were established for the elaboration of SLPs, mandatory for all organs and entities of the Federal Public Administration, whether direct, autarchic, foundational, or state-dependent companies. The aforementioned norm defined SLPs as "a planning tool with defined objectives and responsibilities, actions, goals, execution deadlines, and monitoring and evaluation mechanisms, which allows the organ or entity to establish sustainability practices and rationalization of expenses and processes in Public Administration" (Brasil, 2012a, art.3º).

Regarding sustainability practices and rationalization of the use of materials and services,

Article 8 of Normative Instruction No. 10/2012 stipulates that the SLP should cover, at a minimum, the following topics: consumer goods, electricity, water and sewage, selective waste collection, quality of life in the workplace, sustainable procurement and contracting, and staff transportation (Brasil, 2012a, art. 8º). It is evident that the SLP does not only encompass aspects of environmental development. Rather, social sustainability topics can be discerned with the inclusion of the theme "quality of life in the workplace" (Luiz, Pfitscher & Rosa, 2015).

### **Strategies for Implementing Sustainability Actions in Higher Education Institutions (HEIs)**

In order for sustainability initiatives in Higher Education Institutions (HEIs) to be successful, several strategies need to be followed. Brinkhurst, Rose, Maurice, and Ackerman (2011) assert that without the support of all stakeholders (managers, students, faculty, and operational staff), the institutional transformation necessary for the implementation of sustainability initiatives will not occur. The support of all stakeholders was also highlighted by Blanco-Portela et al. (2018) as a good strategy for the execution of sustainable actions.

According to Blanco-Portela, Benayas, Pertierra, and Lozano (2017), communication, leadership, shared governance, collaborative efforts, conscious individuals, and committed individuals are strategies for executing sustainable actions. The same authors cited resource availability as an important driver for sustainability, giving examples such as external funding and/or financial support from the government.

Blanco-Portela, Benayas, and Lozano (2018) conducted a study in which 8 strategies/drivers were identified, pointed out both through interviews and workshops, to steer HEIs towards sustainability. Among these strategies, the institutionalization of sustainability was also mentioned in the work of Berchin et al. (2018).

The other strategies/drivers include: employee commitment to assuming roles and responsibilities; influence and international standards; environmental certifications and marketing of best practices; allocation of human resources; consistent institutional legislation; engagement of the academic community; networking and support from university leaders and policymakers.

Horhota, Asman, Stratton, and Halfacre (2014) made some suggestions related to sustainability. They suggested that the curriculum of HEI courses include sustainability; they also suggested that posts be made on the HEI's website and a campus newspaper covering the university's sustainability plans (Horhota et al., 2014). Geng, Liu, Xue, and Fujita (2013) in a study conducted at a university, which can be considered a model to follow in terms of sustainability practices, concluded that this success was due to various factors, namely: strong government involvement, strong leadership at the university, and the entire project was carefully planned and approved by the university's board of directors.

Ralph and Stubbs (2014), in a study conducted with English and Australian universities, found that the three most cited driving factors for integrating sustainability into English HEIs were: financial incentives; government and/or HEI policies/programs, and internal pressure, both from students and staff. Resource availability was also cited as a driving force for the implementation of sustainable actions, as previously seen by Blanco-Portela et al. (2017).

Interdisciplinarity was cited by Blanco-Portela et al. (2017) and Ralph and Stubbs (2014). Meanwhile, the incorporation of sustainability into the curriculum of courses can be considered one of the most important strategies for sustainability since several authors such as Berchin et al. (2018), Horhota et al. (2014), Ralph and Stubbs (2014), Velazquez, Munguia, Platt, and Taddei (2006) have mentioned it.

Berchin et al. (2018), in a literature review on strategies of Higher Education Institutions (HEIs) to promote sustainability, identified several

strategies these institutions could adopt to become more sustainable. The identified strategies were: Institutional Agenda, Research, Teaching, Campus Operations, and Knowledge Dissemination. According to the authors, as well as Blanco-Portela et al. (2018), the adoption of an institutional agenda for sustainability is essential to support sustainability-related programs in HEIs (Berchin et al., 2018).

The dissemination of knowledge about sustainability in HEIs occurs through the public sharing of the results of their sustainability programs and actions (Berchin et al., 2018). Typically, this sharing is done through sustainability reports. The issue of communicating sustainability was also mentioned by Horhota et al. (2014), who suggested making posts on the HEI's website and publishing a campus newspaper covering the university's sustainability plans.

Sustainability strategies and drivers should be integrated. Thus, sustainability can be fully implemented in HEIs. However, for a sustainability plan to be successful, in addition to applying the strategies mentioned earlier, it must overcome some barriers. In the next section, these barriers will be addressed.

### **Social and Environmental Practices Associated with the Implementation of the Sustainable Logistics Plan (SLP)**

The term "practice" can be associated with other terms such as praxis, action, interaction, activity, experience, and performance (Silva & Figueiredo, 2017). However, for Silva and Figueiredo (2017), sustainability practice means more than just actions being practiced. However, for the purposes of this research, sustainability actions are referred to as practices. This choice was made taking into account the terminology of the legislation that regulated the Sustainable Logistics Plan (SLP).

Sustainability practices, according to Normative Instruction No. 10, dated November 12, 2012, from the Secretariat of Logistics and Information Technology, are "actions aimed at

building a new institutional culture model aiming at the insertion of sustainability criteria into the activities of Public Administration" (Brazil, 2012a, art. 2). In Annex II of the aforementioned norm, examples of sustainability and rationalization practices that can be used as reference in the elaboration of SLPs are provided. These examples are divided into six themes: consumer goods, electricity, water and sewage, selective waste collection, quality of life in the workplace, and procurement and contracting.

In a study conducted with Canadian HEIs, Brinkhurst et al. (2011) identified the best sustainability practices carried out in these institutions: emissions management plan, all new buildings purchasing green label credits, stormwater management plan, wastewater plan, diversion of waste from closed-loop, diversion of wet waste, hazardous waste management, and on-site organic farm used by hospitality services.

Geng et al. (2013), in a study at Shenyang University in China, considered a model in terms of sustainability, also pointed out several sustainability-related practices: use of renewable energy; energy-saving projects; approach to minimizing wastewater; replacement of traditional trash bins; waste separation and hazardous waste management.

Geng et al. (2013) also mentioned green research and education practices as important for sustainability. Regarding green research, Geng et al. (2013) mentioned the key laboratory in environmental science and engineering. Regarding green education, Geng et al. (2013) presented the green course: a course open to the public on environmental protection and international collaboration in partnership with Nagasaki University in Japan.

From the practical and theoretical studies presented, it is evident that the operationalization of sustainability practices in an HEI is a complex and challenging process, as it involves all sectors and even the stakeholders of the HEI. Therefore, for practices to be fully implemented, they must be integrated, ensuring that all actors of the HEI and its most important stakeholders participate.

## Challenges Encountered in Implementing the PLS

In the realm of institutional milieu, various challenges are commonly encountered in implementing sustainable actions and strategies (Brinkhurst et al., 2011). These include resistance from supervisors or sector partners who do not lend support, as well as a lack of time and/or authority (Brinkhurst et al., 2011). Regarding the lack of support, Ferrer-Balas et al. (2008) assert that a rigid incentive structure can serve as a barrier to rewarding teachers and staff participating in university sustainability initiatives. Conversely, conservative administration fosters a lack of desire for change among management and its collaborators (Ferrer-Balas et al., 2008).

Verhulst and Lambrechts (2015) also declared that one of the barriers they encountered regarding the implementation of sustainability actions in HEIs was the lack of support from students, teachers, and decision-makers. Similarly, Lozano, Lukman, Lozano, Huisingh, and Lambrechts (2013) cited lack of support as one of the barriers faced by HEIs in transitioning towards sustainability.

Concerning the lack of time, academics, due to their commitments to research, teaching, and administration, have limited time for other activities (Brinkhurst et al., 2011). Similarly, administrative staff are also tied up with the demands of their positions, making parallel projects related to sustainability impossible to execute if not explicitly included in the employee's tasks (Brinkhurst et al., 2011).

Another factor cited by the authors is bureaucratic complexity in effecting changes (Brinkhurst et al., 2011). Dissuaded by bureaucracy, teachers and administrative staff feel unable to effect changes and choose not to identify strongly with the university community as a whole (Brinkhurst et al., 2011). These considerations align with the research of Ferrer-Balas et al. (2008), which stated that university structure and

conservative administration can be regarded as barriers to implementing sustainability in HEIs.

Another barrier faced by both students and staff is "the lack of necessary financial support to implement campus sustainability initiatives" (Brinkhurst et al., 2011, p.350). This barrier can be considered one of the most significant, as it has been cited in several other studies such as Blanco-Portela et al. (2017), Blanco-Portela et al. (2018), Evangelinos, Jones, and Panoriou (2009), and Verhulst and Lambrechts (2015).

Ferrer-Balas et al. (2008) mention three internal barriers to sustainability: academic freedom, incentive structure (salary, promotion), and conservative administration. Lack of awareness about sustainability and the environment was also cited (Blanco-Portela et al., 2017; Lozano et al., 2013) as a barrier faced by HEIs in transitioning towards sustainability..

Blanco-Portela et al. (2017) outlined barriers to the implementation of sustainability, including lack of interest and/or involvement, lack of leadership, and weak internal communication among stakeholders. Lack of interest and/or involvement was also noted in Blanco-Portela et al.'s (2018) work. Similarly, inefficient internal communication was identified as a barrier to sustainability by Blanco-Portela et al. (2018) and Verhulst and Lambrechts (2015). Thus, it is evident that there are numerous barriers to be overcome for HEIs to effectively implement sustainability strategies and actions on their campuses.

## Methodological Elements of the Research

Regarding the research approach, this study can be classified as qualitative. There are various types of classifications of qualitative approaches. The proposed research adopts an exploratory study approach because it aims to better understand a specific phenomenon, in this case, the sustainable logistics plan of IFSC. As previously mentioned, few studies have focused on studying the sustainability plan of an HEI.

Exploratory studies are defined as investigations seeking an overview of the object

under study. This type of research is particularly conducted when the chosen topic has been poorly studied (Richardson, 2017; Sampieri, Collado & Lucio, 2013).

Regarding the focus, this research can be classified as descriptive because its objective is to describe the characteristics of a specific social phenomenon. According to Silva and Pohlmann (2021), descriptive research can take various forms, including exploratory studies.

To provide support, data triangulation was used because in this type of study, it is recommended to use different sources of evidence (Yin, 2015). Furthermore, using multiple sources of evidence allows for various assessments of the same phenomenon (Yin, 2015). The timeframe in this study is classified as cross-sectional because it was conducted over a period of five months, from June to October 2019.

Regarding the object of study, the sustainable logistics plan of IFSC was investigated, an institution that is economically and socially significant for the state of Santa Catarina. Therefore, the unit of analysis in this research is the Sustainable Logistics Plan, and the case is IFSC. The research was conducted across all campuses of the Federal Institute of Santa Catarina (IFSC).

Regarding data collection, both primary and secondary data were utilized. Concerning primary data, 36 in-depth interviews were conducted with actors from various IFSC campuses who work directly with the PLS. Sixteen of these interviews were conducted with members of the sustainability committees of the campuses. Through these interviews, it was possible to analyze the planning and operational execution of the PLS.

The remaining 20 interviews were conducted with the Directors of Administration of the campuses and the Rectorate of IFSC. They were chosen because, according to the Internal Regulations of an IFSC campus (IFSC, 2017a), the Administration Department, headed by the Director of Administration, "plans, coordinates, supervises, monitors, and evaluates the budgetary, financial, personnel management, physical,

technological, and material structure policies and actions of the Campus." Through these interviews, it was possible to verify the strategic and tactical management of the PLS in the campuses and Rectorate.

Therefore, these individuals are key informants as they possess broad knowledge about the plan and contribute to managerial and operational developments to facilitate the implementation of this plan at IFSC. These interviews were conducted in person, with their content transcribed in full. Regarding documentary research, the latest PLS of the institution, the PLS-IFSC 2017-2018, as well as Regulatory Instruction No. 10/2012 and Decree No. 7,746/2012, were utilized as they are the legal instruments guiding the PLS.

Regarding data analysis and interpretation, this research employed the content analysis technique (Bardin, 2011). In this research, content analysis was conducted as follows: initially, the interviews and documents were read in full; subsequently, keywords were underlined; from this, analysis categories were created; from these categories, codes were created; after the creation of the codes, all interviews were coded; then, 2nd level codifications and classifications were made by gathering the codes of the 1st level categories by similarity; finally, a new exercise of gathering codes by similarity was conducted, resulting in the categorization of the 3rd level.

The sources of evidence for data triangulation were analyzed based on the interviews transcribed in full and the PLS-IFSC 2017-2018. According to Yin (2015), through the convergence of evidence, data triangulation helps reinforce the validity of the construct of the case study.

Regarding ethics, this research sought to preserve the names of the interviewees and the campuses in which they work. As the objective of the work was not to compare the campuses but rather to research IFSC as a whole, efforts were made to preserve the identities of the participants. Because of this, the responses to the interviews were likely more spontaneous and honest, as the

interviewees knew they would not be persecuted in any way for their responses. Furthermore, regarding ethics, this research sought to be impartial and unbiased, a characteristic pointed out by Yin (2015) as essential for ethical research.

Following this, a summary table is presented, encompassing all the stages of the methodological profile used in this section

Table 1  
**Methodological Steps**

Design da Pesquisa	Classification
Research Design	Qualitative
Approach	Exploratory
Data Support	Data Triangulation
Time Horizon	Cross-sectional
Data Collection Sources	Documentary Data, In-depth Interviews
Data Tabulation Technique	Tables, Charts, Flowcharts/Figures
Data Analysis Technique	Content Analysis

Source: Author's Compilation (2020)

## The Results Presentation

Regarding the PLS-IFSC 2017-2018 (IFSC, 2017b), the key findings can be summarised as follows:

a) The plan is outdated, with no mention of the PLS 2019. Furthermore, there is no information about the plan available on the institution's official portal.

b) The plan delineates certain rules and obligations for its execution.

c) The plan establishes various strategies for its implementation, including the submission of research and/or extension projects focusing on sustainability, PLS actions within the campus' PI, interdisciplinary committees, partnerships, and sustainability notices or bulletins.

d) The plan assigns responsibilities for its execution.

e) The plan has established four subprograms for the implementation of sustainable actions: Proper Disposal, Natural Resources, Intelligent Constructions and Contracts, and Articulation, Culture, and Sustainable Spaces. Within each of these subprograms, the PLS has devised priority actions. Responsible parties for the execution of

these priority actions, indicators, and expected outcomes have been determined.

## Strategies Adopted by IFSC for the Operationalization of the Sustainable Logistics Plan (SLP) and Encountered Barriers

The strategies adopted to implement the Sustainable Logistics Plan (SLP), according to the respondents, can be classified as follows:

**Behavioural:** Strategies in this category include "awareness-raising actions," "involving/engaging people," "encouraging/motivating people," and "working together." Awareness-raising actions were the most frequently cited strategy by the interviewees. For instance, E8 stated, "We have some posters here on campus and we always work on awareness, especially in the bathrooms...". It is evident that strategies in this category are related to the "sustainability bulletin or information board" strategy suggested by IFSC in its SLP-IFSC 2017-2018 (IFSC, 2017b).

**Commission:** Strategies related to this category include "commission meetings," "having a formalized sustainability commission," "showing actions in practice," "transparency in commission actions," "dividing the commission team into subgroups," and "mapping sustainability actions carried out on campus." Regarding "commission meetings," E2 stated, "...the group comes together, discusses, makes decisions together. Then minutes are sent out, an email about the decisions made, and we have a deadline to execute these actions and, if we can't, to report the reason." Concerning "showing actions in practice," E15 affirmed: "Actions where people see the impact in practice are the strategies that are most successful." This strategy also relates to the "sustainability bulletin or information board" because this bulletin aims, among other things, to share actions, best practices, and commission work for the knowledge and participation of the academic community. Regarding the importance of the commission, E28 stated, "The commission is the management arm in terms of sustainability



within the campus."

Management: Strategies in this category include "greater enforcement," "training," "identifying best practices from other locations," "holding events," "budget availability," "management support," "integrating the academic community with the external public," "institutionalizing sustainability on campus," "exchanging experiences," and "following the A3P programme." For E20, "If there was training to understand... where we can go, what we can do, what we can implement."

Rectorate: This category encompasses strategies that fall under the responsibility of the IFSC Rectorate for execution. It includes "support from the Rectorate." E18 commented, "...perhaps someone from the Rectorate with more knowledge in the area could come here, maybe every quarter, to stimulate us, give us ideas. Because we don't know which project to start first."

Communication: Strategies in this category include "dissemination," "communication," and "visual actions." E15 discussed communication on social media: "I think the strategy of social media works quite well." E9, commenting on the strategies used, stated, "...especially communication, access to information for everyone within the federal institute, nowadays it's very localized within the sector, so if everyone had access, they could assist with that."

Commission and Management: Within this category, there are strategies that are applicable to both management and the commission for execution. These include "monitoring sustainability actions," "determining which sustainability actions will be carried out," and "establishing goals, deadlines, and indicators." For E3, a strategy that can be used is "dividing the team, determining the actions, and carrying out this monitoring. Because then we ensure that someone is looking at it."

Education: Strategies related to this category include "research and/or extension calls for specific sustainability projects" and "sustainability in courses." These two strategies were suggested by IFSC in its SLP 2017-2018 (IFSC, 2017b).

However, few respondents mentioned strategies related to this area. For example, E12 stated regarding research and extension calls for specific sustainability projects: "Something that was done last year, I don't know if (due to budgetary reasons) we will be able to do it again, was a call for didactic-pedagogical research projects with an emphasis on sustainability."

Of the five strategies outlined in the IFSC SLP 2017-2018 (IFSC, 2017b), only the "sustainability bulletin or information board" strategy was well-mentioned by the respondents. Strategies related to sustainable behaviour, such as "awareness-raising actions," are the most commonly used by the institution. Conversely, strategies related to education are the least utilized by IFSC.

Regarding the strategies identified by the respondents for IFSC to fully implement the SLP, they can be classified into the following categories:

Behaviour: Strategies in this category include "demonstrating the importance of the plan," "making people feel part of it," "awareness-raising," and "engagement."

Plan Management: This category includes strategies such as "presenting numbers/results," "communication/dissemination," and "planning."

Management/Rectorate: Strategies in this category include "management commitment," "making A3P implementation mandatory," and "holding individuals accountable who do not adhere to waste management, for example."

The categories "behaviour" and "plan management," to some extent, are related to the strategy of the "sustainability bulletin or information board" mentioned in the IFSC SLP 2017-2018 (IFSC, 2017b). This is because this strategy refers, among other things, to "demonstrating the importance of the plan" and "presenting numbers/results." The strategy highlighted by the respondents for IFSC to fully implement the SLP was communication/dissemination actions.

The other two most cited strategies were "making people feel part of it" and "presenting numbers/results." Regarding the former, E5 stated, "People find it interesting, but that doesn't mean

they are necessarily involved. When they realize there is a return, that it is part of their lives, they have complete adherence."

Regarding "presenting numbers/results," E16 stated, "When the results appear, even if partial, colleagues and the academic community begin to turn their attention to who is doing it, it's interesting, there is someone dedicated to it, and they start to collaborate."

### **Socio-environmental practices associated with the operationalization of the Sustainable Logistics Plan (SLP)**

The practices cited by the researchers can be classified into the following categories:

**Environmental Practices:** Within this category, the following practices are included: "management of recyclable waste," "management of hospital waste," "management of laboratory waste (chemical and biological)," "management of mechanical waste," "management of building waste," "oil waste management," "management of electrical/electronic waste," "management of fabric waste," "management of organic waste (composting)," "non-use of disposable cups," "water reuse," "use of recycled materials," "tree planting," and "creation of green spaces."

Most of the practices in this category fall under the "Destino Certo" subprogram of the PLS-IFSC 2017-2018 (IFSC, 2017b). These practices were the most cited by the respondents. It is evident that waste management is the flagship among the socio-environmental practices of IFSC.

**Social Practices:** Practices in this category include: "community garden/distribution of seedlings," "community outreach project," "support for waste pickers' cooperatives," "empowerment of outsourced workers," "construction of a gym," "photography contest," "blood donation campaign," "donation of unused goods to schools by the institution," "public service health and safety committee (CIPA) and library in the hall." These practices are generally more related to the "Articulation, Culture, and Sustainable Spaces" subprogram of the PLS-IFSC

2017-2018 (IFSC, 2017b).

**Economic Practices:** Practices related to this category include: "sustainable procurement," "water consumption-related practices," "energy consumption-related practices," "specific budget for the SLP," "awareness of consumption/waste reduction," "solar panels/photovoltaic plant," and "use of LED lamps." These practices are primarily related to two subprograms of the PLS-IFSC 2017-2018 (IFSC, 2017b), namely "Natural Resources" and "Smart Constructions and Contracts."

**Management Practices:** Practices belonging to this category include: "planning," "meetings," "reports," "training of outsourced workers," "management support," "goal setting," "practices and indicators for actions," "following the A3P program," "having a documented sustainability plan," "marketing/communication/promotion activities," "activities during the environment week," "trainings," and "participation in events."

Some of these actions are related to the "Articulation, Culture, and Sustainable Spaces" subprogram of the PLS-IFSC 2017-2018 (IFSC, 2017b). The management practice most recalled by the respondents was "training of outsourced workers."

**Behavioural Practices:** Within this category, the practices related to the "Articulation, Culture, and Sustainable Spaces" subprogram of the PLS-IFSC 2017-2018 (IFSC, 2017b) are included.

**Teaching-related Practices:** The practices within this category mentioned by the researchers were "environmental education" and "sustainability in the curriculum." These practices are related to the "Articulation, Culture, and Sustainable Spaces" subprogram of the PLS-IFSC 2017-2018 (IFSC, 2017b) and also to the strategy "actions of the PLS in the campus IP."

These results show that IFSC is at a very advanced stage regarding environmental practices such as waste management and also economic practices such as controlling water and energy consumption. These practices are related to the "Destino Certo" and "Natural Resources" subprograms of the PLS-IFSC 2017-2018 (IFSC, 2017b). However, for the PLS to be fully

implemented at IFSC, the other subprograms of the PLS must be applied more frequently and comprehensively within the institution.

## **Challenges Experienced in Implementing the Sustainable Logistics Plan (SLP)**

The barriers reported by the respondents can be classified into the following categories:

**Management:** Within this category, barriers are related to aspects that management either fails to comply with or does not provide for the execution of the Sustainable Logistics Plan (SLP). These include: "lack of time," "not a priority," "financial resources," "actions undertaken but not documented," "workforce," and "it's a working group, not a department - it's not in the IFSC's organizational chart."

Regarding the lack of time, E7 stated, "what we noticed a lot was the lack of time, we started to prepare reports with colleagues, but we are swamped with classes and the DAM staff as well." On the issue of lack of priority and financial resources, E7 said, "this year we even thought about doing another activity here, but with the budget cuts, we have other priorities. There is no money even to pay for electricity..."

**Behaviour:** Barriers in this category include: "changing people's habits," "motivation/encouragement," "lack of engagement," and "lack of awareness-raising actions for people."

**Support:** Barriers in this category include: "lack of knowledge" and "support from the central committee (which no longer exists)."

**Environmental Practices:** The barrier cited by respondents in this category was "waste management." E14 stated, "we have difficulty with environmental collection because the campus is located in a remote area without other public buildings. So, it's always a struggle to get the truck to come and pick up; and for students to dispose of it properly."

**Marketing:** This category encompasses barriers to dissemination and communication.

**External Assistance:** Barriers originating from lack of external support and assistance. Respondents mentioned that there is a lack of greater support from the municipality.

**Procurement:** Regarding barriers related to sustainable procurement, one respondent noted that access to sustainable products is very limited.

## **Analysis and Discussion of the Results**

The PLS-IFSC 2017-2018 (IFSC, 2017b), despite being outdated, addresses the various sustainability themes required by legislation (Brazil, 2012a). According to the researcher's assessment, the most serious issues regarding the plan include its lack of updates and the absence of any information about it on the institution's website. It is suggested that these issues be promptly addressed.

The strategies identified by the respondents for implementing the PLS varied considerably. The most commonly cited strategies were "awareness-raising actions," "demonstration of actions in practice," "training," and "communication." On the other hand, the PLS-IFSC 2017-2018 advocated the following strategies for its implementation: "submission of research and/or extension projects with a sustainability theme," "PLS actions in campus IP," "interdisciplinary committees," "partnerships," and "sustainability noticeboards or bulletins."

Comparing the aforementioned strategies with the literature, it is noted that the strategy of "interdisciplinary committees" is present in Blanco-Portela et al. (2017) and Ralph and Stubbs (2014). Meanwhile, the strategies of "awareness-raising actions" and "communication" are found in Blanco-Portela et al. (2017). The strategy of "integrating sustainability into course curricula," which in the case of PLS-IFSC 2017-2018 is described as "PLS actions in campus IP" and "submission of research and/or extension projects with a sustainability theme," is present in the works of Horhota et al. (2014), Ralph and Stubbs (2014), Velazquez et al. (2006), and Berchin et al. (2018). The strategy of "partnerships" was found

in the work of Blanco-Portela et al. (2017).

Following this data comparison, the following findings emerged. Contrary to what the literature suggests, respondents consider "demonstrating actions in practice" and "training" to be important strategies for implementing the IFSC sustainability plan. Perhaps, in the reality of IFSC, merely having a sustainability plan is not sufficient. It is crucial to demonstrate in practice the actions undertaken by the committee and the IFSC management in relation to this plan. Perhaps, this strategy is only present in this study for that reason. It would be interesting to conduct further research to verify whether this reality applies solely to IFSC or is also present in other Brazilian HEIs with a PLS.

Regarding training, it was probably not mentioned in the literature because in the studied HEIs, training courses may already be institutionalized. In the case of IFSC, it is evident that there is insufficient investment in training staff and students in sustainability issues. Hence, the staff have raised this need for training. It is suggested that IFSC implement all the strategies outlined in its plan. Furthermore, it is recommended that IFSC also adopt the other strategies identified in the literature.

Regarding the three most cited strategies by respondents for fully implementing the PLS, they have already been identified in the literature as drivers for implementing sustainability practices. Blanco-Portela et al. (2017) stated that effective communication is essential for the implementation of sustainable actions. With effective communication, IFSC can demonstrate to the academic community the seriousness of sustainability issues and the positive impacts that action can have on the environment, as well as the negative impacts if they are not executed.

However, IFSC still uses rather rudimentary communication tools such as posters and sporadic email communication. It is suggested that IFSC invest in communication actions, such as creating a specific sustainability website like the one at <https://ufscsustentavel.ufsc.br>, which is the specific sustainability website of the Federal

University of Santa Catarina. It is also recommended that IFSC create specific plan pages on social media platforms such as Facebook, Instagram, and Twitter. This way, IFSC will be able to reach a larger audience, and presumably, more people will engage with the sustainability cause.

The strategy of shared governance was mentioned by Blanco-Portela et al. (2017). Shared governance of the PLS can make people feel part of it. Consequently, people become more engaged with the cause. Therefore, it is proposed that IFSC aims to involve as many people as possible in the development of the PLS. Additionally, it is suggested that, despite the existence of a sustainability committee to implement plan actions, this committee should invite more people to participate in the operationalization of some actions.

Berchin et al. (2018) highlighted that the development of sustainability reports is a significant driver for the adoption of sustainability practices in an HEI. Through these reports, IFSC can present the numbers and results of the plan. It is recommended within this strategy that management ensures the sustainability committees annually produce the sustainability report and that the Communication Directorate of the Rectorate, or another responsible department, publishes all sustainability reports on the IFSC website.

It is recommended that IFSC not only implements these three most cited strategies by the interviewees but also seeks to apply other strategies and drivers mentioned in the literature that could fully implement the PLS in the institution.

Regarding sustainability practices, those most executed by IFSC are related to waste management. These data seem to confirm the results obtained in the studies of Brinkhurst et al. (2011) and Geng et al. (2013). It can be considered that waste management is already institutionalized in the institution, meaning it has become part of the organization's routine. Another practice widely carried out by IFSC is the construction of community gardens and distribution of seedlings.

These data appear to confirm the results obtained in the studies of Brinkhurst et al. (2011) on best sustainability practices in HEIs.

Another socio-environmental action widely adopted by IFSC is practices related to energy consumption such as actions to reduce energy consumption and the search for more sustainable energy sources. The works of Brinkhurst et al. (2011) and Geng et al. (2013) confirm that these practices are widely used in HEIs. However, while actions to reduce consumption are well institutionalized in the organization, actions regarding new energy sources still lack more integrated application.

According to the respondents, this is because these new energy sources are financially burdensome. To address this issue, it is suggested that IFSC implement the previously mentioned strategies related to increasing financial resources.

Regarding the barriers experienced by IFSC in implementing the PLS, two stand out: lack of financial resources and lack of time. The lack of financial support is not unique to IFSC in executing its sustainability plan. In the literature (Blanco-Portela et al., 2017; Blanco-Portela et al., 2018; Brinkhurst et al., 2011; Evangelinos, Jones & Panoriou, 2009 & Verhulst & Lambrechts, 2015), this problem has been widely cited. To address this issue, IFSC can attempt to use various strategies. One of them is to establish partnerships with both private and public sectors, as advocated in the PLS-IFSC 2017-2018 (IFSC, 2017b).

An alternative would be to seek, from the federal legislative power, parliamentary funds to execute projects in the sustainability area. Also, with the public sector, specifically the executive branch, IFSC could try to obtain a larger budget for the institution as a whole or even a budget with a specific allocation for sustainable actions. Another internal possibility to alleviate financial problems would be for IFSC to allocate more than 0.5% of its budget for sustainable actions.

The lack of time to work with the plan is another problem faced by the institution. Similar to the present study, other research (Brinkhurst et al., 2011 & Lozano et al., 2013) identified this as a

barrier when executing sustainability plans.

One possible solution to this problem would be to implement the strategy of plan institutionalization suggested by Blanco-Portela et al. (2018) and Berchin et al. (2018). That is, it is recommended to establish a sector, coordination, or even a sustainability department at IFSC. Thus, individuals working in it would not face the issue of lack of time, as they would be working full-time in the sector/coordination/department.

Another barrier raised by respondents was that the PLS is not a priority for the institution. This problem can lead to lack of support and/or recognition (Blanco-Portela et al., 2018; Brinkhurst et al., 2011; Ferrer-Balas et al., 2008; Verhulst & Lambrechts, 2015) for the sustainability committee to execute the plan. This lack of priority may have occurred because the institution's management is traditional and conservative (Blanco-Portela et al., 2017; Ferrer-Balas et al., 2008 & Lozano et al., 2013) since, despite sustainability being a growing theme in society and academia, it represents a disruption to the more traditional management model.

Another reason for sustainability not being considered a priority for the institution may be because it is deemed irrelevant by the institution's managers (Lozano et al., 2013). And, this lack of relevance can lead to lack of interest and/or involvement (Blanco-Portela et al., 2017 & Blanco-Portela et al., 2018). To address this barrier, it is suggested that individuals within the sustainability committee at campuses/rectorates raise awareness among campus/rectorate management. This awareness can be achieved by demonstrating to management the benefits that sustainable actions can bring to the institution and the lives of the academic community and all its affiliates. Only then can the PLS become a priority for the institution.

## Concluding Remarks

The research undertaken aimed to analyse strategies and practices for the operationalisation of the Sustainable Logistics Plan within a public

institution of higher education. The primary strategies implemented by IFSC (Instituto Federal de Santa Catarina) to execute the Sustainable Logistics Plan (PLS) include "awareness-raising actions," "demonstrating actions in practice," "capacity building," "communication/dissemination," "fostering a sense of belonging," and "presenting numbers/results." However, to implement these strategies, IFSC must primarily overcome barriers such as "financial resources," "lack of time," and "lack of prioritisation."

Regarding sustainability practices, the most commonly used by the institution are "waste management," "community garden/distribution of seedlings," and "practices related to energy consumption." Actions related to "practices related to energy consumption" fall under the "Natural Resources" subprogram of the PLS-IFSC 2017-2018 (IFSC, 2017b). Furthermore, waste management corresponds to the "Right Destination" subprogram of the PLS-IFSC 2017-2018.

The main theoretical contribution of this study stems from confirming the connection between sustainability and the PLS. It was found that the basic assumptions of sustainability are related to all subprograms of the PLS-IFSC 2017-2018. Only the subprogram "Articulation, Culture and Sustainable Spaces" had a low relationship with the dimensions of sustainability. Consequently, there is a greater connection between PLS-IFSC and the environmental and economic pillars of sustainability than with the social pillar of sustainability.

Regarding practical contributions, the results are particularly relevant as they reveal that the IFSC's PLS is in a state of stagnation, perhaps even paralysis. The primary social contribution of the study lies in proposing improvements for the implementation of the IFSC's PLS. Since IFSC is a public educational institution, better management of its activities contributes to the more efficient use of public resources, whether financial or personnel.

This research encountered the following limitations: in the collection of documentary data,

it was not possible to access the sustainability reports of IFSC's PLS because only reports from 2015 and 2016 are available on the old IFSC website. Additionally, it was not possible to interview all those responsible for the sustainability committees of the campuses, as many campuses no longer have sustainability committees.

Having highlighted the contributions achieved by the study and presented the main limitations, proposals for future studies are outlined as follows:

- a. Replicate this study in five years' time. This would allow verification of whether the institution has implemented the actions proposed in this study.
- b. Conduct a similar study in other public HEIs (Institutions of Higher Education) to ascertain the connection between sustainability dimensions and the sustainability plans of these institutions.
- c. Investigate the communication tools used by Brazilian public HEIs to disseminate their PLS.
- d. Explore whether other Brazilian public HEIs implement sustainability practices prescribed in IN 10 of 2012 (BRASIL, 2012a) or if they go beyond the legislation.

Thus, this study endeavours to present tools for HEIs and possibly more companies, whether public or private, to achieve sustainable development, as this has been one of the major global objectives in recent years (Gazzoni et al, 2016).

## References

- Araújo, S. M., Freitas, L. S., Rocha, V. S. G. (2017). Gestão ambiental: práticas sustentáveis nos campi de uma IFES. *REUNIR: Revista de Administração, Contabilidade e Sustentabilidade*, 7(3), 36-50. DOI: <https://doi.org/10.18696/reunir.v7i3.672>
- Association, A. P. (2022). *Manual de publicação da APA: o guia oficial para o estilo APA* (7th ed.). Grupo A.
- Bardin, L. (2011) *Análise de conteúdo*. Lisboa, Portugal: Edições 70.
- Berchin, I. I. (2017) *Instituições de educação superior como agentes de inovação para o desenvolvimento*

sustentável: estudo em uma universidade comunitária de Santa Catarina. 2017. 180 f. Dissertação (Mestrado em Administração) - Programa de Pós-Graduação em Administração, Universidade do Sul de Santa Catarina, Florianópolis.

Berchin, I. I., Sima, M., Lima, M. A., Biesel, S., Santos, L. P., Ferreira, R. V., ... & Ceci, F. (2018). The importance of international conferences on sustainable development as higher education institutions' strategies to promote sustainability: A case study in Brazil. *Journal of Cleaner Production*, 171, 756-772. DOI: <https://doi.org/10.1016/j.jclepro.2017.10.042>

Blanco-Portela, N., Benayas, J., Pertierra, L. R., & Lozano, R. (2017). Towards the integration of sustainability in higher education institutions: a review of drivers of and barriers to organisational change and their comparison against those found of companies. *Journal of Cleaner Production*, 166, 563-578. DOI: <https://doi.org/10.1016/j.jclepro.2017.07.252>

Blanco-Portela, N., Benayas, J., & Lozano, R. (2018). Sustainability leaders' perceptions on the drivers for and the barriers to the integration of sustainability in Latin American higher education institutions. *Sustainability*, 10(8), 29-54. DOI: <https://doi.org/10.3390/su10082954>

Brasil. Ministério do Planejamento, Orçamento e Gestão. *Instrução Normativa nº 10, de 12 de novembro de 2012a*. Estabelece regras para elaboração dos Planos de Gestão de Logística Sustentável. Recuperado de <https://bit.ly/2GN0p4h>

Brasil. *Decreto nº 7.746, de 5 de junho de 2012b*. Regulamenta o art. 3º da Lei nº 8.666, de 21 de junho de 1993, para estabelecer critérios e práticas para a promoção do desenvolvimento nacional sustentável nas contratações realizadas pela administração pública federal direta, autárquica e fundacional e pelas empresas estatais dependentes, e institui a Comissão Interministerial de Sustentabilidade na Administração Pública - CISAP. Recuperado de <https://bit.ly/2ZRStaT>

Brinkhurst, M., Rose, P., Maurice, G., & Ackerman, J. D. (2011). Achieving campus sustainability: top-down, bottom-up, or neither?. *International Journal of Sustainability in Higher Education*, 12(4). DOI: <https://doi.org/10.1108/14676371111168269>

Choi, Y. J., Oh, M., Kang, J., & Lutzenhiser, L. (2017). Plans and living practices for the green campus of

Portland State University. *Sustainability*, 9(2), 252. DOI: <https://doi.org/10.3390/su9020252>

Creswell, J. W. (2014). *Investigação Qualitativa e Projeto de Pesquisa: Escolhendo entre Cinco Abordagens*. Penso Editora.

Evangelinos, K. I., Jones, N., & Panoriou, E. M. (2009). Challenges and opportunities for sustainability in regional universities: a case study in Mytilene, Greece. *Journal of Cleaner Production*, 17(12), 1154-1161.

Ferrer-Balas, D., Adachi, J., Banas, S., Davidson, C. I., Hoshikoshi, A., Mishra, A., ... & Ostwald, M. (2008). An international comparative analysis of sustainability transformation across seven universities. *International Journal of Sustainability in Higher Education*, 9(3). DOI: <https://doi.org/10.1108/14676370810885907>

Gazzoni, F., Scherer, F. L., dos Santos, M. B., Hahn, I. S., & de Moura Carpes, A. (2016). A influência de fatores individuais no conhecimento sobre o Plano de Gestão de Logística Sustentável. *Desenvolve Revista de Gestão do Unilasalle*, 5(2), 57-77. DOI: <https://doi.org/10.18316/2316-5537.16.23>

Geng, Y., Liu, K., Xue, B., & Fujita, T. (2013). Creating a "green university" in China: a case of Shenyang University. *Journal of Cleaner Production*, 61, 13-19. DOI: <https://doi.org/10.1016/j.jclepro.2012.07.013>

Goedert, A. R., Dos Santos, W., & Abreu, P. F. (2018, March). Plano de gestão de logística sustentável: avaliação das IFES brasileiras. In *Anais do 22º Simpósio de Administração da Produção, Logística e Operações Internacionais*.

Horhota, M., Asman, J., Stratton, J. P., & Halfacre, A. C. (2014). Identifying behavioral barriers to campus sustainability. *International Journal of Sustainability in Higher Education*, 15(3). DOI: <https://doi.org/10.1108/IJSHE-07-2012-0065>

IFSC. (2017b). *PLS-IFSC 2017-2018*. Recuperado de <https://bit.ly/2tgGaZW>

IFSC. (2017a). *Regimento interno – campus Lages*. Recuperado de <https://bit.ly/2TnHFJL>

Lozano, R., Lukman, R., Lozano, F. J., Huisingsh, D., & Lambrechts, W. (2013). Declarations for sustainability

in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, 48, 10-19.

Luiz, L. C., Pfitscher, E. D., & Rosa, F. S. (2015). Plano de Gestão de logística sustentável: Proposição de ações e indicadores socioambientais para avaliar o desempenho nos órgãos Públicos federais. *Revista de Administração da UFSM*, 8, 8-27. DOI: <https://doi.org/10.5902/1983465917696>

Maldonado, A. C. (2016). *Plano de Gestão de Logística Sustentável: Um Estudo na Universidade Federal de Mato Grosso do Sul*. 2016. 141f. Dissertação (Mestrado Profissional em Administração Pública em Rede Nacional) - Universidade Federal de Mato Grosso do Sul, Campo Grande.

Moreira, A. C. S. (2018). Application of the sustainable logistics plan in the public administration. *Brazilian Journal of Operations & Production Management*, 15(1), 137-142.

Pereira, R. S., & Barbosa, G. E. M. (2018). Plano de Logística Sustentável-PLS: Um estudo comparativo em Universidades Federais da Região Metropolitana de São Paulo. *Revista Organizações em Contexto*, 14(28), 3-28.

Petrassi, A. C. M. A., Van Bellen, H. M., & Cardoso, T. (2016) Planejamento para gestão sustentável: a elaboração do 1º plano de gestão de logística sustentável da Universidade Federal de Santa Catarina em 2013. In *Anais do 16º Colóquio Internacional de Gestão Universitária*, Florianópolis.

Ralph, M., & Stubbs, W. (2014). *Integrating environmental sustainability into universities*. Higher Education, 67(1), 71-90.

Richardson, R. J. (2017). *Pesquisa Social - Métodos e Técnicas* (4a. ed.). Grupo GEN.

Sampieri, R. H., Collado, C. F., & Lucio, M.D.P. B. (2013). *Metodologia de pesquisa* (5th ed.). Grupo A.

Santa, S. L. B., Pfitscher, E. D., & Rocha, V. S. (2016). Plano de Gestão de Logística Sustentável: Blocos com Reaproveitamento de Resíduos Contribuindo com Instituições Federais de Ensino Superior na Adoção da A3P. *Revista Gestão & Sustentabilidade Ambiental*, 5(2), 444-457. DOI: <https://doi.org/10.19177/rgsa.v5e22016444-457>

Silva, K. C. O., Pohlmann, P. (2021). *Pesquisa Qualitativa Exploratório Descritiva: Uma Breve Discussão Teórica*. In M. F. S. Praxedes (Org.) Métodos mistos na pesquisa em enfermagem e saúde (Cap. 1, pp. 1-8). Ponta Grossa, PR: Atena.

Silva, M. E., & Figueiredo, M. D. (2017). Sustainability as practice: Reflections on the creation of an institutional logic. *Sustainability*, 9(10), 18-39. DOI: <https://doi.org/10.3390/su9101839>

Silva, M. J. G., Omena, A. C. C., Cavalcante, M. C. G., Silva, M. S. (2016). Implementação do Plano de Logística Sustentável Na Universidade Federal de Alagoas Sob O Enfoque da Logística Reversa Nas Aquisições e Contratações. In: *Anais do 5º Simpósio Internacional de Gestão de Projetos, Inovação e Sustentabilidade*, São Paulo.

Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable university: what can be the matter? *Journal of Cleaner Production*, 14(9-11), 810-819.

Verhulst, E., & Lambrechts, W. (2015). Fostering the incorporation of sustainable development in higher education. Lessons learned from a change management perspective. *Journal of Cleaner Production*, 106, 189-204. DOI: <https://doi.org/10.1016/j.jclepro.2014.09.049>

White, S. S. (2014). Campus sustainability plans in the United States: where, what, and how to evaluate? *International Journal of Sustainability in Higher Education*, 15(2). DOI: <https://doi.org/10.1108/IJSHE-08-2012-0075>

Yin, R. K. (2015). *Estudo de Caso: Planejamento e métodos*. Bookman editora.