

Universities in Transition to Sustainability: Challenges and Opportunities for the Campus of the University of Brasilia in Planaltina



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Abstract A significant expansion of Brazilian public higher education occurred in the last decade. It is necessary to analyze the performance of sustainability within new federal university campuses to identify successful cases that may influence the university system as a whole. The present study is important because it addresses the case of a campus with the potential to be a reference on sustainability in Brazil, but it still faces obstacles and challenges to reach this condition. The Faculdade UnB Planaltina (FUP) is one of the three new campuses of the University of Brasília, and presents potential for sustainability given its location, courses, faculty profile and organizational structure. This study analyzes the performance of FUP in the field of sustainability from the seven dimensions of university activities proposed in the literature on sustainability in higher education: education, research, outreach, campus operations, on-campus experiences, Institutional framework, assessment and reporting. The campus's strengths are research, outreach, participation in management and the Institutional Pedagogical Political Project that reflects the intentionality of the campus in relation to sustainability. However, it is necessary to continue to strengthen sustainability in the curriculum and implement an environmental management system.

Keywords Education for sustainable development · Expansion of higher education · Social responsibility · Sustainable university

1 Introduction—Contextualization and Objectives

According to data from the Ministry of Education, since 2003, and especially since the Restructuring and Expansion of Federal Universities Program (REUNI) started in 2007, 14 new federal universities and more than 100 new campuses were created

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in Brazil. This process of creating federal universities' campuses outside of large urban centers expanded the number of municipalities served by universities from 114 in 2003 to 237 by the end of 2011. The expansion promoted an increase of approximately 70% of the attendance enrollments in the federal network higher education (Brasil 2010; Nogueira et al. 2012).

The impact of this investment in the country's development is still being studied and is not conclusive (Nogueira et al. 2012; Mancebo 2015). However, the expected renewal of higher education may not be occurring to its full potential if the new campuses do not change the university culture. Instead, they run the risk of reproducing the large-scale historical limitations of Universities, especially in terms of pedagogical practices, management and the conditions of access and permanence of students in higher education.

Many of these characteristics of universities are related to obstacles in the implementation of a culture of sustainability described in the literature. Examples of these obstacles include: personal resistance to change and innovation (Lozano 2006; Ćulum 2014); the institutional and systemic barriers to change (Harris and Crane 2002); the limited and compartmentalized perception of the concept of sustainability by managers (Wright and Horst 2013); difficulties in conducting participatory processes in the institutionalization of sustainability (Disterheft et al. 2014); the rigidity and traditionalism of Higher Education Institutions, in which the Cartesian and Newtonian models of thought predominate, which relegate the teaching and learning processes to mechanical actions that do not meet the skills needed for sustainability (Lozano 2006; Lotz-Sisitka et al. 2007; Segalàs et al. 2012; Lozano et al. 2014; Ćulum 2014).

Considering the theoretical set developed in the last decade (Lozano 2006; Alshuwaikhat and Abubakar 2008; Karatzoglou 2013; Lozano et al. 2014; Amaral et al. 2015; Bizerril et al. 2015 and many others), it can be concluded that the Sustainable University is expected to perform consistently and consciously in the following dimensions:

- *Education*: the presence of inter- or trans-disciplinary approached to sustainability in different disciplines and curricula, including in teacher training programs, seeking the promotion of sustainability values such as critical thinking and complex vision, conviction and skills to act as future professionals and citizens committed to sustainability.
- *Research*: the existence of structures and financial support for the production of knowledge and technology on sustainability based on complex and trans-disciplinary thought.
- *Campus Operations*: allowing for the presence of sustainability in the daily functioning of the university, including management and efficiency in the use of water, energy, waste and gases, as well as transport and accessibility, and access to quality food.
- *Outreach*: strengthening the integration of the university with society (other universities, governments, businesses, schools, civil society organizations and the local community) in promoting sustainability.

- *Assessment and reporting*: implementing an environmental management system among several that may be available, as well as the internal and external dissemination of the results of this monitoring.
- *Institutional framework*: including sustainability in policies, missions and other official documents.
- *Sustainability experiences on campus*: promoting the existence of working groups, facilities and other permanent sustainable practices with the academic community; maintaining an environment of respect in relations between students, faculty and staff; carrying-out democratic management that enables participation in decision-making.

Brandli et al. (2015) and Leal Filho (2010) considered that the implementation of sustainability practices in Brazilian universities does not seem to be sufficiently satisfactory or comparable with other universities, such as those in Europe. In fact, sustainability has been receiving increasing attention from managers of higher education institutions worldwide given its direct implication with university missions in terms of teaching, knowledge production and engagement with society. However, the transition from higher education institutions towards Sustainable Universities (SU) is necessarily a process that suggests profound changes in the traditional way that the university operates. The new Brazilian campus experience offer the opportunity to create new university cultures. That is why they can play the role of driving the transformation of universities to meet the demand of sustainability. In this sense, it is necessary to analyze the performance on sustainability of the new federal university campuses to identify successful cases that may influence the system as a whole. The present study is important because it addresses the case of a campus with the potential to be a reference of campus sustainability in Brazil, but still faces obstacles and challenges to reach this condition.

Faculdade UnB Planaltina (FUP) is one of the four campuses of the University of Brasilia, located 40 km from the federal capital of Brazil. At eleven years of age, the campus presents potential for sustainability given its location, courses, teachers' profile and organizational structure (Bizerril 2013).

This study analyzes the sustainability performance of FUP from the seven dimensions described above. It seeks to identify how FUP has been taking the path to becoming a SU, what advances have already been made, and what characteristics of the campus promote this process. At the same time, the paper also identifies which aspects are not well advanced and the obstacles that remain.

2 Sustainability in FUP

This is an exploratory study based on the analysis of institutional documents and participant observation. The author is a professor and current director of the campus, allowing for such access. The main documents analyzed were the Institutional Pedagogical Political Project, the campus regiment and the FUP web site

(www.fup.unb.br). The campus performance was analyzed from each of the seven dimensions of sustainability in universities.

2.1 Institutional Framework

The campus has not signed any of official agreements on sustainability nor does it formally participate in institutional forums in this issue. However, the Institutional Pedagogical Political Project is categorical in affirming the institutional commitment to sustainability by including the five pillars that make up the FUP missions, as seen in the section:

The FUP's mission is to guide ethical and citizen intervention, scientifically and socially reflected in the spheres of education, research and extension for the theoretical and methodological development that contribute to the resolution of socio-environmental problems (Universidade de Brasília 2012, p. 10).

This document clearly reflects that the campus' compromise to sustainability is in line with the main and current recommendations of the international literature for an effective and complex performance as a Sustainable University, when it states that the campus must:

- (a) Consider the academic environment as a structure that promotes the culture of sustainability;
- (b) Consider the university environmental management as an ongoing educational process of principles and practices of sustainability, with permanent pedagogical intent that is experiential, informal and extracurricular;
- (c) Ensure the acquisition of values, knowledge, skills and sustainable attitudes towards critical and complex environmental knowledge for the academic community;
- (d) Be an example of and testimony for sustainability through the establishment of internal environmental programs at the campus and in the context of their community and territorial scope;
- (e) Adopt continuous improvement strategies of Campus environmental performance;
- (f) Integrate environmental knowledge and principles of sustainability into teaching activities, research projects and university extension;
- (g) Conduct research and studies that contribute to increasing knowledge about sustainable development;
- (h) Develop permanent mechanisms for the continuing education of staff, teachers, students and graduates (Universidade de Brasília 2012, p. 10).

2.2 Education

FUP offers four interdisciplinary degrees: Bachelors in Education of Natural Sciences; Bachelors in Rural Education; Bachelor of Environmental Management and Bachelor of Agribusiness Management. All of the programs have a strong identity with the theme of sustainability, however its presence in the depth of the curriculum varies between courses. There is only one internal study on

environmental issues out of all offered courses on campus within the four programs, developed by Layrargues and Dourado (2011). The authors analyzed 226 different subjects and verified that, among them, 17% present environmental issues as fundamental, whereas 23% insert environmental issues as inserted peripherally, and in 60% it is altogether absent.

There are few sustainability courses that are common across all four programs. Nor are there studies on pedagogical approaches of the disciplines in order to assess the degree of development of key competencies for sustainability, such as critical thinking, complex perspectives, openness to interdisciplinarity, innovation, cooperation and teamwork, as well as the ability to adapt technologies and methodologies to different contexts, make and implement decisions, communicate and promote interaction between institutions and people.

There are two regular spaces for the exchange of pedagogical experiences, such as the Graduate Collegiate and the Pedagogical Conversations seminars, coordinated by the Education and Language area of FUP. Both are held monthly. Another possibility is the Socializing Experiences Seminar first held in 2015 and again in 2017 when it became a periodical activity. There are two institutional programs of teacher training (PIBID/CAPES), the PIBID “Diversity” and PIBID “Science Education”, which can also be oriented to the promotion of Sustainability.

2.3 Research

The five postgraduate programs in operation are also interdisciplinary: Materials Science (PPGCIMA), Environment and Rural Development (PPGMADER), Environmental Sciences (PPGCA), Public Management (PPGGP) and Science Education (PPGEC), the last in partnership with other units of the central campus ‘Darcy Ribeiro’. Two programs are especially dedicated to sustainability, one focusing on the ecological approach to sustainability (PPGCA) and the other more focused on the socio-environmental approach (PPGMADER). The PPGCA was created from the separation of an original proposal of PPGMADER which had a more transdisciplinary character and therefore more in line with the guidelines of education for sustainability, but that was not feasible at the time. The other three programs do not have a particular focus on sustainability, but they often approach it from environmental education (PPGEC), sustainable purchasing management (PPPGGP) or environmental innovation (PPGCIMA).

In 2011, an analysis of 119 research projects registered in FUP indicated that for each ten research projects, approximately seven of them did not consider environmental issues, in two of them environmental issues were peripheral, and one held environmental issues as central (Layrargues and Dourado 2011). Despite this statement, a more current analysis is necessary when considering the recent emergence of groups, centers and research programs related to sustainability such as the Center for Studies, Research and Extension in Agroecology and Sustainability (NEPEAS), the Metropolis Observatory, the Rural Education

Observatory, the Observatory of the Movement for Social Technology in Latin America, the Laboratory of Environmental Nanosciences and the aforementioned PPGCA.

2.4 *Campus Operations*

In daily campus management it is clear that despite the efforts made, none of the major aspects related to resource use is sufficiently organized as a sustainability policy. For example, there is no automatic light control system. Nevertheless, water faucets have automatic control taps in the bathrooms, and one sees some control in use in gardening and maintenance on the campus, however, there is no rainwater harvesting system or water reuse for irrigation or for use in toilets. This is particularly worrying at a time when the entire region of Brasília is experiencing a water rationing process due to the low water level in the Federal District reservoirs. Given the growth of the city, water management will be a recurring and crucial issue in the region.

There is a chemical waste collection system for laboratories, and selective collection of solid waste is being implemented throughout the campus, coordinated by FUP's Environmental Advisory. Professors of the Sustainability Nucleus of UnB produced a diagnosis of waste production on the campus, which served as basis for preparation of the selective collection project. Currently the campus has an adequate amount of selective collection bins available in all environments. Recyclable garbage is collected and stored in containers in order to be collected weekly by a trash cooperative. A project still under development aims to compost all of the organic garbage produced on campus, including the university restaurant.

Food is provided by a university restaurant and a snack shop, however there is no university control over, for example, the option for agro-ecological food or locally produced by family farming, as there are no sustainable purchasing strategies.

There is bus transport from the center of Brasília to the campus that runs through the four campuses of the University of Brasília. Despite this, there continues to be an increase in the number of cars in the parking lots, although there is some effort of the academic community to practice a ride culture. Although most students and staff reside in the surroundings of the campus, the occurrence of bicycles is very low, which may be related to the absence of bike lanes in the city of Planaltina.

One potential silver-lining is the fact that the campus has an area of 29.5 hectares that shelters vegetation of cerrado (regional biome with savannah-like vegetation) with high plant and animal diversity. The campus is surrounded by an urban Ecological Park, the Sucupira Park, and the Ecological Station of Águas Emendadas, of 10 thousand hectares, which is one of the main areas of cerrado conservation in the Federal District. This presents a challenge and also an opportunity to apply for resources that could build sustainable architecture and urbanism. This would help to develop campus physical structure in line with the conservation

of this natural environment. In 2017, the academic community on campus is being invited to participate in the discussion of such possibilities through the preparation of the campus' Master Plan.

In 2016 an electronic information system (SEI) was implemented throughout the University, however no studies were yet performed on the environmental impact of the SEI in the reduction of paper consumption.

2.5 Outreach

Layrargues and Dourado (2011) verified that there was a balance between the 15 extension projects registered in FUP at the time of their study. Exactly one third of them belonged to each of the three classes of occurrence of the environmental issues defined by authors: high, medium and low. As in the case of research projects, it is necessary to seek an update on these data in view of the campus growth in recent years and the establishment of laboratories and long-term projects such as the InovaCerrado Project, the Parque Sucupira Project, and the Research Laboratory in Social Sciences, Qualitative Methods and Social Mobilization (LaPCIS).

Since the beginning of its operation, FUP has been notable for the strong outreach action, being the second unit with the largest number of extension projects in the whole university. But the bureaucratic requirements have reduced the number of officially registered projects. There is little integration between projects and also a reduced cooperation with companies, producers and schools regarding the potential associated to sustainability.

Currently, the extension has been strengthened through the support of the structure and support team, in addition to the creation of a campus extension board and the expansion of participation in the organization of the campus outreach actions. As a result, the number of projects increased to 33 in 2017, of which 9 were directly related to sustainability.

Another strong point is the existence of a formal Community Council that includes representations from various sectors of society. However, the council's activities are still incipient, with few meetings a year and few concrete actions.

2.6 Assessment and Reporting

An annual reporting management tool has been improving since a few years ago; however, it does not address sustainability as a specific point. Thus, there are no indicators or monitoring of sustainability actions.

2.7 Sustainability Experiences on Campus

A highlight of the campus is the aforementioned contiguous area of native cerrado vegetation that provides an improved quality of life, as evidenced by the climate and the presence of various birds, as well as pave the way for teaching, research and extension in contact with nature. The cerrado is also present in the green areas of the campus between the buildings. This enables educational and sensorial experiences in the natural environment.

The most obvious sustainability actions in the daily life of the campus are the projects that collect cooking oil for soap production, the agroecological product fair, the practice of selective collection, and several lectures and debates on environmental issues.

The culture of participation is one of the hallmarks of FUP (Bizerril 2015). As a way to enable participation in management, at least twice a year a meeting is held with all teachers and staff, and another with students, to evaluate and plan aspects of campus management. Teachers, staff and students participate as advisors in the monthly meetings of the FUP Council. It is here where, besides the talking points of the day-to-day bureaucratic management, strategic planning discussions are generate that relate to sustainability issues as a mission of the FUP.

3 Conclusions: Challenges and Opportunities for the Campus

The analysis presented in this paper is based on the perspective of a single campus teacher, who is currently the campus director. This may have generated limitations and bias in describing some of the aspects considered on campus sustainability, but it did not prevent the study from providing a good overview of campus performance.

The campus' strengths are research, outreach, participation in management and, above all, the Institutional Pedagogical Political Project. This project reflects the intentionality of the campus in relation to sustainability and is in line with the main and current recommendations of the international literature for an effective and complex performance as a Sustainable University. However, it was recommended that the campus expands spaces for pedagogical discussion, implements an environmental management system, invests in sustainable buildings and strengthens sustainability experiences on campus. All of these actions are based on strengthening the participation of the community council which is made up of members from Planaltina.

In order to do so, it is necessary to mobilize the diversity of knowledge and skills of staff, teachers and students in order to guide the conduct of the academic community towards sustainability. Two actions with strong mobilizing power are the preparation of the Master Plan of the FUP and the revision of the campus

regiment (in progress since 2017). We believe that these two actions, involving the spatial planning and formalization of rules and missions with a view to the future of the campus, can result in significant impacts to strengthen the practice of sustainability since conducted through successful participatory processes.

It is recommended to expand the analysis on the performance of new campuses regarding sustainability in order to map the actions that can influence the university system as a whole. The FUP experience can be seen as a stimulus for other new campuses on the path of transition to a sustainable university.

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