

## **Environmental change in sustainable management approach in Brazilian public education: multiple case study**

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### **Abstract**

This work aimed to study the Environmental Agenda in Public Administration - A3P in two public institutions in Brazil: Federal Institute of Tocantins – IFTO and Technological Education Federal Center – Cefet/RJ. A3P implementation is intended to insert an Environmental Management system, mitigating risks of loss in public assets and natural resources waste. In addition, it proposes new management approach encouraging environmental education. Environmental Agenda in Public Administration - A3P encourages Civil Servants to embody environmental management principles in their daily activities saving natural resources, reducing public spending through the more rational use of public goods and proper residues management. This work can contribute as a source of information about topic, whose publications still are scarce in the country, thereby encouraging the adoption of A3P in other Brazilian public institutions.

### **Keywords**

Environmental Management, Environmental Agenda in Public Administration, Sustainability, Cefet/RJ, IFTO.

## **1. Introduction**

Public Administration is facing major environmental challenges - spending less energy and water, generating the least waste, acquiring products that do less harm and promoting decent working conditions. In this sense, conscious consumption, the fight against waste and socio-environmental responsibility should be encouraged.

Public institutions mobilize various sectors of the economy through government purchases, which move from 15 to 20% of the country's GDP. (MMA, 2009) Relatively, it is a burden for the Public Administration. Faced with this need, institutions have been motivated to rethink the current patterns of production and consumption, seeking to reduce negative socio-environmental impacts. In this way, the public sector has been stimulating innovative strategies and developing programs and projects that promote the discussion about the adoption of a policy of Socio-environmental Responsibility of the sector.

In Brazil, the Federal Centers of Technological Education reflect the evolution of a type of educational institution that, in the twentieth century, accompanied and helped to develop the process of industrialization of the country. The history of these Centers is therefore linked to the origin of vocational education, which, in terms of national scope, goes back to 1909, when President Nilo Peçanha determined, by decree, the creation of Schools of Artistic Apprentices in the capitals of the states, for Vocational, primary and free education. Education in Brazil has undergone great changes since 1990. The main changes in this period were:

- a large increase in the number of students enrolled in higher education, especially in the private network;
- Emergence of new Higher Education Institutions (HEIs);
- Improvement of the National System for the Evaluation of Higher Education (SINAES);
- professionalization of market participants, some even opening capital on the São Paulo Stock Exchange (Bovespa) and making acquisitions and new investments throughout the country;
- Great advancement in distance learning.

In addition to regulating and supervising actions taken by private initiative, in order to promote sustainability, must also be an active agent in actions that allow sustainable development. In other words, public administration is as much a promoter of environmental sustainability as it is of private initiative. Thus, based on this premise, the Brazilian Government, through the Ministry of the Environment (MMA) created the Environmental Public Administration Agenda (A3P), such agenda is based on the guidelines proposed by Agenda 21 and it is applicable to Direct Public Administration And indirect, in the three spheres of government: federal, state and municipal.

According to Valle (2004, p.69), "environmental management consists of a set of well-defined measures and procedures that, if properly applied, allow to reduce and control the impacts introduced by an enterprise on the environment."

The creation of an Environmental Agenda in Public Administration (A3P), in response to the need to face serious environmental issues, in 1999, becomes the main program of public administration for social and environmental management. Currently, the program has been implemented by several public bodies and institutions of the three spheres of government, as a social and environmental management model. In this same spirit, from 2012, it was established the obligation of all Public Administration entities to prepare their Environmental Logistics Management Plan (PLS).

For Petrone (2010), it is fundamental to create a sense of belonging to the mobilization: if public employee is not being supportive, means he is receiving something in return, that makes his life more important. Maintaining a focus on quality of life is critical, as well as avoiding actions that create barriers to behavior. He adds that adherence to the A3P Program is not the primary act in the constructive stage of administrative sustainability, it is the first step.

The present research, developed in the field of public management, focuses on the analysis and study of the process of implementation and monitoring of the Environmental Agenda in Public Administration - A3P in the scope of higher education institutions. Being chosen as method, the case study between the Federal Institute of Tocantins and the Federal Center of Technological Education Celso Suckow da Fonseca in Rio de Janeiro, inserting itself in the context of environmental sustainability of the federal government, which seeks the construction of a new culture Institutions and bodies.

## **2. A3P - Environmental Agenda in Public Administration**

A3P, as it is better known, is the acronym for Environmental Agenda in Public Administration. A3P emerged in 1999, a project of the Ministry of the Environment, aiming to revise production and consumption patterns, as well as, to adhere new benchmarks of environmental sustainability in public agencies. In 2001, it became the Environmental Agenda Program in Public Administration, with the aim of sensitizing public managers to incorporate principles and

criteria of environmental management into their routine activities. This program was the winner of the "Best of the Examples" award in the Environment category, which was awarded by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2002, and Making its various implementations even more justifiable in the public spheres.

The Environmental Agenda in Public Administration (A3P) discusses the awareness of public managers on social and environmental issues, encouraging them to incorporate principles and criteria of environmental management into the routine activities of public administration, by promoting actions that demonstrate rational use of natural resources and public goods, adequate management of waste generated, quality of life in the work environment, minimum environmental impact and maximum comfort for users in construction, sustainable bidding / green purchasing, and Process of continuous training of public servants (MMA, Ministry of the environment, 2009, p.9).

A3P is divided into five thematic axes: rational use of resources; Waste Management; Sensitization and training of the servers; Quality of life in the workplace and sustainable biddings.

According to the A3P Handbook (2009), the rational use of natural resources and public goods imply to use them economically and rationally avoiding their waste. This axis includes the rational use of energy, water and wood in addition to the consumption of paper, plastic cups and other record materials. Other thematic axis, the proper management of waste passes through the adoption of the 5R's policy: Rethink, Reduce, Reuse, Recycle and Decline. In this way, one must first think of reducing consumption and combating waste in order to destine the waste generated correctly.

The situation of solid waste management in the country is an issue that has received increasing attention from public institutions at all levels of government. Federal and state governments have applied more resources and created specific programs and lines of credit for proper waste management.

The 5R's policy has been addressed in Environmental Education (EA) projects that work on the issue of solid waste as the generating theme. In relation to the policy of the 3Rs, widely diffused and prior to the latter, the policy of the 5Rs has the advantage of allowing

Managers a critical reflection of consumerism, rather than focusing on recycling.

According to the Education for Sustainable Consumption Manual, "recycling is one of the most advantageous alternatives to solid waste treatment, both from an environmental and social point of view. It reduces the consumption of natural resources, saves energy and water and even reduces the volume of waste and pollution. In addition, when there is a well-structured selective collection system, recycling can be a profitable economic activity. It can generate jobs and income for families of recyclable waste pickers, who should be the priority partners in the selective collection."

The A3P Handbook (2009), defines the quality of life in the workplace aims to facilitate and meet the needs of the worker by developing their activities in the organization through actions for personal and professional development.

The public administration must permanently seek a better Quality of Life at Work by promoting actions for the personal and professional development of its employees. To this end, public institutions must develop and implement specific programs that involve the degree of satisfaction of the person with the work environment, improvement of general environmental conditions, health and safety promotion, social integration and human capacity development, among other factors.

Awareness raising seeks to create and consolidate citizen awareness of socio-environmental responsibility in the servers. The training process contributes to the development of institutional and individual competencies, providing the opportunity for the employees to develop attitudes for a better performance of their activities.

Professional training is essential to implement a new approach to consumer habits and environmental behavior patterns in the workplace, as ignorance of the program and results weakens adherence.

However, in this process, fundamental factors related to the culture of the people and the organizations that are inserted are often ignored. Changing the life of the servers is a necessary point of view; It is not only a question of linking the idea of waste recycling to the restructuring of life of waste collectors organized in cooperatives.

### **3. IFTO sustainable approach**

IFTO is an institution of basic, professional and superior education, pluricurricular, multi-campus and decentralized, specialized in the offer of professional and technological education in the different modalities of teaching, based on the conjugation of technical and technological knowledge in its pedagogical practice.

Aware of its responsibility in the execution of public policies, IFTO carried out its activities within the government programs of its budget, always based on its definitions of Vision, Mission and guiding principles, as established:

Vision: To be a reference in teaching, research and extension, with emphasis on technological innovation of products and services, providing sustainable regional development.

Mission: To provide educational, scientific and technological development in the state of Tocantins through personal training and professional qualification.

At the end of 2011, the IFTO signed a cooperation agreement with the Ministry of the Environment MMA to implement and implement the Environmental Agenda Program in Public Administration - A3P - which is a program that aims to implement socio-environmental management and incorporate sustainability criteria into activities of public administration.

The implementation of the Environmental Agenda Program in Public Administration - A3P in the IFTO, driven by the application of the principles of efficiency, economics and the search for management tools that support the needs of sustainable development, is a proposal for the purpose of developing a quantitative and qualitative response on environmental and sustainable issues for Public Administration.

Actions and programs executed by IFTO

- Environmental Agenda in Public Administration -A3P
- Solidary Selective Collection
- Quality of Life Program-PQV
- Sustainable Bidding - Procurement and Service Contracts complying with the norms and guidelines of environmental sustainability.
- Green IT - acquisition of computer equipment with low standard of electric energy expenditure.
- Follow-up of Environmental Licenses with the responsible bodies: IBAMA, Naturatins etc.
- Weeks of the Environment in the Campi
- State trash and citizenship forum member effective.
- Technological extension projects that aim at the conservation and sustainability of natural resources

### **3.1 Solidary Selective Collection at IFTO**

In 2012 the actions started with the signing of the Cooperation Agreement with ASCAMPA - Association of Waste Pickers and Waste Pickers of the Region-Center-North of Palmas, aiming to implement the Solidary Selective Collection in the Institute and exchange experiences in the area of education In the year of 2014 the Selective Collection took place at the Rectory and Campus Palmas. Selective dumps were purchased for the Rectory and the Campi, and produced graphic material for environmental awareness, such as the reduction of water and electric energy expenditures.

All Collection Material is destined to ASCAMPA - Association of Palm Recyclers that has a Technical Cooperation with IFTO for the development of Sustainable actions. The Cooperation Agreement between the Federal Institute of Education, Science and Technology of Tocantins (IFTO) and the Association of Waste Pickers of the Region-Central-North Region of Palmas-TO (ASCAMPA) is part of the Environmental Agenda of Public Administration (A3), signed with the Ministry of the Environment in 2011 and implemented in IFTO in 2012. IFTO is responsible for:

- To carry out the Solidary Selective Collection at Campus Palmas and Rectory of IFTO;
- Separate discarded recyclables;
- Accomplish, encourage and support environmental education actions;
- Constitutes the Commission responsible for Selective Solidarity Collection;

On the other hand, ASCAMPA is responsible for:

- Collecting and processing recyclable material from IFTO;
- Cooperate in actions to improve the selective collection of solid waste;
- Assist in environmental education actions that must be developed during the term.

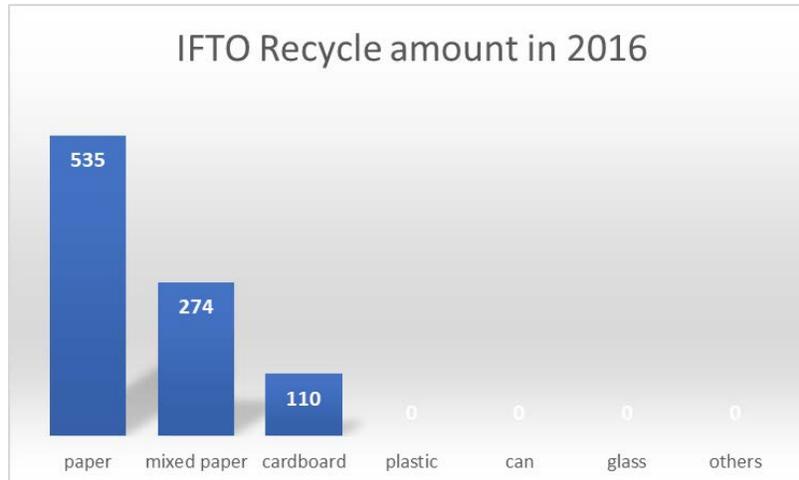


Figure 1 – IFTO Quantities collected from recyclables  
Source: authors own elaboration

### 3.2 IFTO other sustainable initiatives

#### *Sustainable Bidding*

The Federal Institute of Tocantins over the last few years has been seeking to carry out its contracting or acquisitions using criteria and practices of sustainability, such as the acquisition of air conditioners with INVERTER technology, that is, more efficient, generating energy savings Around 20%, acquisition of electrical and electronic equipment whenever possible with class "A" seal of the National Program for the Conservation of Electric Energy - PROCEL; Acquisition of graphic material using mostly recycled paper. Regarding the engineering works, the staff of IFTO has sought to implement actions aimed at efficiency in the new buildings of this institution, as an example we mention, rainwater harvesting, more efficient lighting type, among others.

#### *Sustainable Logistics Plan*

The Sustainable Logistics Plan 2016-2019 was elaborated from 2016-2019 of the PDI - Institutional Development Plan 2015-2019, and should guide the environmental actions of the IFTO, and may be modified according to needs and administrative adjustments to meet the innovations that bring improvements to the environmental management of the Institution.

#### *IFTO has Green Seal of MMA*

In 2016 the IFTO got the Green Seal from the Ministry of the Environment, thanks to the participation of its community in the actions of sustainability and environmental awareness. Continuing the actions, the SEI System for the management of administrative processes is being implemented, which will certainly drastically reduce the use of paper by the Institution, being at the same time a technological advance in management and a measure that contributes extraordinarily to the environment.

## 4. Towards a more sustainable approach at Cefet/RJ

Celso Suckow Federal Center of Technological Education of Fonseca (Cefet/RJ) had its origin in 1917 as Normal School of Arts and Crafts Wenceslau Braz. Currently, it is a federal teaching institution that understands itself as a public space of human, scientific and technological formation. It offers technical courses integrated to secondary, post-secondary, technological, undergraduate and post-graduate courses lato sensu and stricto sensu (masters and doctorates), in the face and distance modalities.

Cefet / RJ operates in the teaching, research and extension triad and aims to contribute to the training of professionals well prepared for the economic and social development of mesoregions in the state of Rio de Janeiro. Since the expansion of the federal network of technical and technological education, the institution has the Maracanã

campus and seven other campuses spread throughout the state of Rio de Janeiro: Angra dos Reis, Itaguaí, Maria da Graça, Nova Friburgo, Nova Iguaçu, Petrópolis and Valença.

Mission: To promote education through teaching, research and extension activities that provide, in a reflexive and critical way, integral training (humanistic, scientific and technological, ethical, political and social) of professionals capable of contributing to scientific, cultural, technological and Of society.

Vision: Become Federal University of Applied Sciences of Rio de Janeiro.

Cefet/RJ has in its Institutional Development Plan (IDP) the challenges of training demands in order to achieve a sustainable environment, associated with industrialization and trade policies, economic infrastructure (energy, transport, telecommunications) and social (education, health and sanitation), technological qualification, among other priorities that are imposed to the development with social reach. To this end, the educational institution has been incorporating actions that promote community awareness through training courses in the area of "Environmental Management and Sustainability", which reduce the amount of solid waste generated, which encourages the search for postures and equipment that Ensure energy efficiency and incorporate environmental parameters in procurement and bidding.

Even so, it can be said that in relation to the guidelines established in the previous IDPs, there was a significant advance in relation to the principles of social responsibility and environmental sustainability in the development of technological education in the dimensions of teaching, research and extension, which is A step towards the development of its environmental sustainability policy.

#### **4.1 Solidary Selective Collection at Cefet/RJ**

Since August 2015, CEFET/RJ has been carrying out the separation of recyclable waste and destined to a cooperative of waste pickers, in compliance with Federal Decree 5940/2006, since the implementation of the Recicla Cefet/RJ Program.

This program is associated with several benefits in the environmental, social and economic contexts, as it generates income and allows the social inclusion of recyclable waste pickers in the formal market, and consequently, reducing the destination of waste to landfills and dumps, as well as environmental impacts As well as collaborating with the global discussion on practices in the pursuit of sustainable development. Among the materials that can be recycled, are the various types of papers, plastics, metals, glass, cooking oil and electronics.

Currently, CEFET/RJ has already established its Central Commission for Selective Solidarity Collection (CCCCSS) - Campus Maracanã, as well as the presence of Adjunct Commission for Selective Solidarity Collection in other campuses. The Commission is responsible for planning, structuring and implementing the Solidary Selective Collection program on campus. Some tasks to be carried out by the Commission are identified:

1. Perform a diagnosis of the sources of waste and of the gravimetry generated in the Maracanã Campus;
2. Logistics planning for the collection flow, as well as the type and location of storage of the material;
3. Planning the awareness of both the participating employees and the target public of necessary support for the success of the project;
4. Contact with the cooperatives of collectors of recyclable materials and verification of compliance with the legal requirements of hiring them;
5. Execution, Monitoring, Evaluation and Improvement Plan after the first performance analysis of the implementation and operation of the project.

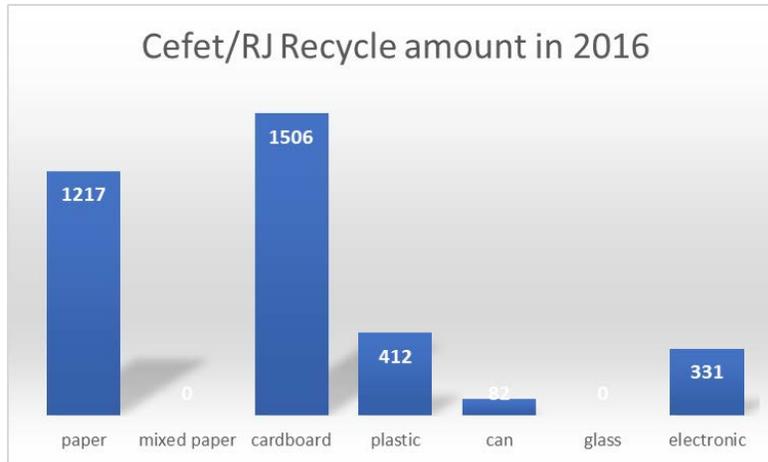


Figure 2 – Cefet/RJ Quantities collected from recyclables  
Source: authors own elaboration

Paper and cardboard waste is more prominent; Expected results due to the fact that it is an educational institution, where the initial and high elimination of the same by the administrative sectors and the teachers occurs, especially in the period of the end of semesters. Due to the experience of Selective Solidarity Collection implementation, which is one of the initiatives for the elaboration of the Sustainable Logistics Management Plan (PLS), CEFET / RJ is moving towards the formalization of the management plan from the adherence to A3P.

#### **4.2 Institutional Environmental Sustainability Strategy Section establishment**

As a result of this, the Institutional Environmental Sustainability Strategy Section (SESAI / DIGES) was created, which aims to implement the A3P that will lead to the Sustainable Logistics Management Plan. The Sustainable Logistics Management Plan aims to meet the requirements of Normative Instruction 10, dated November 14, 2012, and structure a management project with the actions and their details, the objectives and goals to be achieved, the And the implementation schedule of actions for the following sustainability topics: consumables, electricity, water and sewage, selective collection, quality of life in the work environment, sustainable public procurement and contracting, and personnel displacement ( fuel consumption).

The plan is seen as a "planning tool with objectives and responsibilities (...), which allows the organs and entities of the Federal Public Administration to establish practices of sustainability and rationalization of expenses and processes" (MPOG, 2012). According to Decree 7.746/2012, the plan should comply with the following sustainability guidelines.

- I- Adopt procedures that cause less impact on natural resources;
- II- Give preference to materials, technologies and raw materials of local origin;
- III- Use more efficiently natural resources such as water and energy;
- IV- Provide greater generation of jobs, preferably with local labor;
- V- Provide longer life and lower cost of maintenance of the good and the work;
- VI- Use technological innovations that reduce the pressure on natural resources; and
- VII- Make use of resources that have an environmentally-based source of natural resources used in goods, services and works (Article 40).

As well, PLS should contain, as a minimum:

- I- update of the inventory of goods and materials of the organ or entity and identification
- II- of similar ones of less environmental impact for substitution;
- III- practices of sustainability and rationalization of the use of materials and services;
- IV - responsibilities, methodology of implementation and evaluation of the plan; and
- V- actions of dissemination, awareness and capacity building (MPOG, 2012, article 50).

As PLS is systematized in projects, initiatives and goals of various deadlines, CEFET / RJ, as an educational institution, has a fundamental role in disseminating knowledge about environmental awareness. In agreement with the author Nicolaides (2006) states that universities must be fully committed to researching sustainability issues and advancing knowledge that can significantly add value to the long-term goal of a fully sustainable environment.

Although it still does not meet all the thematic axes of PLS, CEFET/RJ has taken great steps in this direction. As in all work involving environmental education and, consequently, a change of behavior, the results will appear in the long term; Therefore, the importance of persisting in the pursuit of objectives and periodically monitoring the processes. With regard to CEFET/RJ, it is noted that the institution is willing to react positively to the proposal, having as responsibility to maintain good practices in all its pillars of action - teaching, research and extension. In this way, CEFET/RJ, as well as all educational institutions, must invest in the training of professionals who become aware citizens for the better quality of life.

## **5. Final Considerations**

Much of the waste that goes to landfills and dumps is made up of materials that can be recycled or reused, a feature very common in societies that have not yet adopted effective policies for the preservation of the environment and social actions that promote the generation of Income opportunities and social inclusion of those working in dumps. When considering the selective collection, as an alternative that induces the development of the activity of recycling of waste, that seeks to minimize the environmental impacts and that promotes social equity in opposition to the high polluting potential of the garbage and the situation of social degradation of the families that survive from collecting materials' disposal, a practice of sustainability is configured, under the three spheres: social, environmental and economic.

It is worth mentioning the inexhaustible source of debate, justifies the exploration of the subject, as a new niche, which needs professionals prepared for good administrative practices. Thus, every demand that emerges has as a condition sine qua non the need to be studied to provide more information, classify it, characterize it and adapt it to the current molds used in public organizations.

Throughout both IFTO and Cefet/RJ case studies it can be inferred how public management could be directed towards a more sustainable future. Although major obstacles in the development process of the program are the behavior of resistance to change, inherent to the human being, who in such an attitude instinctively intends to protect, considering the comfortable situation, and the safety of not throwing himself in Still unknown situation susceptible to failure. Often, the difference between failure and success lies in knowing how to realign expectations, that is, in adapting strategic plans.

It is necessary, control that the results do not stop, due to lack of continuity in the technical qualification of the managers and collaborators, or lack of strategic vision to formulate the critical analysis necessary to evaluate the results and use of the indicators to feedback the cycle of Planning and realignment of decisions. Therefore, the problem is not only to define how to do, that is purely managerial, with definition of the action plan and its follow-up, but to identify what should be done to improve, plan and control.

The issue addressed is undoubtedly extremely important, given the high demand for new sustainability practices, and the application of viable means of allying the principles of public administration, such as economy, efficiency, among others, with day-to-day management practices Administrative, as well as the lack of further studies in the area, helped to delimit the topic addressed in the present study.

The use of the A3P Program, which aims to stimulate public managers to incorporate principles and criteria of social and environmental management into their routine activities, leading to the saving of natural resources and the reduction of institutional expenses through the rational use of public goods, waste management, sustainable bidding and the promotion of awareness-raising, training and quality of life in the work environment, extracting the need to evaluate the administrative practices applied and whether the proposed results are being achieved.

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## **Biography**

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