



## **USP Sustainable Development : Educating with Purpose focusing on SDG goals**

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The University of São Paulo is a public University and the largest in Brazil. It is broadly organized into distinct campuses that are installed in different cities of the state of São Paulo, each one with its specific aspects. There are more than 95 thousand undergraduate and graduate regularly enrolled students, standing out as one of the best universities in Brazil and Latin America<sup>[2]</sup>. The total area of USP is about 76.40 km<sup>2</sup> and its built-up area is about 1.99 km<sup>2</sup>. In 2017 there were almost 59 thousand undergraduate students enrolled in the 309 available courses; 37 thousand postgraduate students enrolled in the 265 available programs; 6 thousand faculty members and 16 thousand technical and administrative staff.

The University of São Paulo was responsible in 2016 for 13% of the total Brazilian PhD students. Besides that, 77,813 Masters and 50,388 PhD have been awarded since the university was founded.



USP main Campus.



Since 2014, USP initiated a comprehensive Environmental Management Plan, coordinated by the Superintendence of Environmental Management (SGA). The Environmental Policy at the University was created by the need for a document that would legitimize and guide the environmental initiatives at the University of São Paulo, in order to promote more efficient environmental management and in accordance with the principles of the University. The topics covered are: management, water and wastewater, green areas and ecological reserves, sustainable buildings, environmental education, greenhouse gas emissions, energy, fauna, mobility, waste, and land use.

Thus, USP's Environmental Policy is the basis to guide the formulation of Policies on Environmental Issues, Plans on Environmental Issues, Environmental Masterplans with 11 Thematic Chapters and the Environmental Program of each school or department. By establishing objectives and targets stemming from the diagnosis, these documents establish a better-defined framework for environmental management within the University.

Parallel to the USP internal procedures in endorsing the *Environmental Policy*, *The Regional Office of the Cities Program of the United Nations Global Compact* was inaugurated at USP on October 24<sup>th</sup>, 2017. This is the first office of the program (a humanitarian agreement among businesses, civil society organizations and other institutions around the world, coordinated by the UN) in the world and located on the main campus of University of Sao Paulo.

With the establishment of the office and in partnership with the International Secretariat of the Program, based at the Royal Melbourne Institute of Technology (RMIT), USP will contribute to the advancement of the UN Agenda for Sustainable Development Objectives, Agenda 2030.

This will be done by facilitating projects with governments, civil society, private sectors, academia and UN agencies; of broad-spectrum collaboration so that access to financing own funds is possible for projects that contribute to this agenda; and the exchange of scientific knowledge and cooperation at all levels.

Thus, with the official seal by the highest levels of USP, that happened in 12<sup>th</sup> December 2017, the *Environmental Policy* was established in official terms by the university, all the efforts were reinforced not only to establish and implement the general objectives of the Environmental Policy, but



also to align their practices to actions established within the parameters established by the SDGs United Nations.

The general purpose of this document is to encourage environmental education at the University, to protect health and the environment and to adopt sustainable patterns. In short, these documents aim to promote integrated environmental management at the University in order to improve the quality of life of its members and society in general.

The governing principles of this policy are the prevention and precaution, fairness and proportionality, the mainstreaming of education, interdisciplinary, transparency, participation, access to information, shared responsibility, respect for local conditions, the appreciation of the knowledge produced at the University and responsible action. Moreover, it applies the principle of proximity, by which all environmental problems should be resolved as close to the source as possible in order to stimulate local development.

Some of the means to achieve these objectives, aligned to SDGs United Nations main goals are:

- the computerized corporate system for data and environmental monitoring;
- monitoring and control of environmental performance;
- cooperation between university units and with society as a whole;
- continuous education processes; and
- reallocating human and financial resources for environmental management.

Parallel to these initiatives, SGA - Environmental Management Superintendence supports PILOT PROJECTS that stand out in the environmental area and whose main objective is to minimize and align with the principles established by the university.

The following are the main initiatives of the SGA - Environmental Management Superintendence:

1. **“Let’s Bike” - Bike Sharing System** – Pirassununga Campus.



There are 50 available free shuttle buses operating at the University campuses and more than 5,000 bicycles transiting at USP daily. The campuses located at the city of São Paulo have easy access with bus and subway. The other campuses are mostly accessed by walking distances for the local students.

With the main goal of encouraging the use of more sustainable forms of transportation, the pilot project “**Let’s Bike**” was carried out to encourage the use of bicycles on the campus of Pirassununga, with the installation of shared bicycles, which can be used, in this first moment, with the USP community. The bicycles were installed in Pirassununga campus, in order to facilitate the movement of the local community, in addition to promoting a more sustainable displacement. In the future it is intended to extend the use of the facility to the entire community.



**Bike Sharing System – Pirassununga Campus**

The main results observed in the construction and implantation process of this bicycle lane will be base for establishing guidelines for implantation of others bike sharing systems in all USP campuses.

Currently, a project for the implementation of shared bicycles is being studied at the main campus of the University of São Paulo. The goal is not only to encourage cycling on campus, but also to use it in its immediate surroundings with emphasis along the mais road from the metro access to the campus.

2. **“Species’ Genetic Diversity Bank” - Ribeirão Preto Campus**



The University of São Paulo established 2,312 ha of its total area as Ecological Reserves, aiming the conservation, restoration, research, teaching and extension. Most of these natural reserves are fragments of semideciduous forests and tropical savanna. It is important to highlight the importance of the green areas in the USP campuses in the city of São Paulo, once today this city has a significant deficit of vegetation.

“Species” Genetic Diversity Bank that happens in Ribeirão Preto Campus establishes guidelines that lead to the preservation of areas belonging to the USP-RP Ecological Reserves. In addition to these aspects, the project involves the participation of faculty, researchers and undergraduate and postgraduate students, not only with the objective of restoring the area, but also to work with the local community and aspects related to environmental education and promoting research in different areas of knowledge.



Ribeirão Preto Ecologic Reserve

### **3. Management of Natural Resources at the University of São Paulo (USP) - The use of low cost equipment for water and energy management**

Most of the campuses of the University of São Paulo are located in urban areas and the main campus (in São Paulo City) has the largest built-up area (almost 2 billions m<sup>2</sup>). The largest total areas belong to the Piracicaba Campus (49%), followed by the Pirassununga Campus (31%), which are incrustated in urban areas, but kept as rural campuses. These figures reinforce the importance of having



concrete actions to reduce water and energy consumption in their buildings, as well as to work on data acquisition in a more effective way.

The Management Program for the Use of Natural Resources, part of the Environmental Management Program of USP, depends on the development of diagnosis and stipulation of short, medium and long term indicators and targets. Within the goal of structuring these actions it is been tested a complete cycle of action in the reduction of waste and conservation, rational and efficient use of natural resources in the dependencies of the Center for Sports Practices of the University of Sao Paulo (CEPEUSP).

As a first action, are being implemented is the elaboration of a diagnosis of water consumption and natural gas (NG) during the bath of users of CEPEUSP changing rooms, such as arduino microprocessors. It was also carried out adaptation of light barrier, equipment used in the protection of internal perimeter of properties, to account for the flow of users that are destined to the bath area.

After calibration of the instruments, a period of data acquisition and preparation of the pre-retrofit diagnoses was carried out. With the baseline constructed, water flow reducers were implemented at levels that did not compromise the quality of the bath, but which allowed a reduction of water and NG consumption. In this phase, a pre and post retrofit quality evaluation was performed. According to the first results more than 30% - thirty percent of water consumption was achieved, besides the reduction in financial expenses. In continuity, it is expected that in medium and long term the university will have:

- a) The evaluation of the reduction of environmental impact by the action of conservation, rational and efficient use of natural resources, such as the reduction of the consumption of electric energy for water treatment; reduction of NG consumption and reduction of GHG emissions
- b) The evaluation of the financial impact after Retrofit. Project payback and expense reduction - and the consequent "surplus" of financial resources to leverage other projects

The University has also invested in its lighting system, which now uses high-tech LED luminaire HP3, solar panels with excellent performance even in cloudy weather, with autonomy from 1 day to 3 nights and the intelligent remote management system. The system of remote control of lighting consists of monitoring the points by means of communication antennas installed in each of them, which will transmit, through a georeferenced software, data regarding consumption and operation, that will allow the



monitoring of the network at a distance, to control operation, to program drives and lighting levels by location or time



High-tech luminaire system

The system also provided a reduction of more than 30% in electricity consumption, even with almost double luminaires (from 3,200 to 6,113 units) [7], since USP's total energy consumption between October 2016 and September 2017 was 61,068 MWh, which represents a lower consumption compared to the previous months.

### **Concluding Remarks**

The management of a university with the size of the University of São Paulo is certainly a challenge, as it requires developing governance mechanisms that encompass teaching, research, and extension issues. The sustainable development movement of the second half of the last century brought new and urgent responsibilities for alignment with the principles of sustainability. USP was an active part of this movement, both inside and outside Brazil, and has progressively incorporated the culture of sustainability into its DNA. From speech to practice, today USP invests in a campus that dialogues with its community, with its open doors policy in the cities where it is installed is a key actor and contributes to opening opportunities to society. The environmental issue occupies a prominent place on its campuses, where biodiversity protection and significant amount of green areas contribute to local and global quality of life. Its environmental policy, built on a participatory basis, incorporates and translates its degree of maturity and commitment to the Sustainable Development Goals.