

STRATEGIC PLAN FOR THE SUSTAINABLE MANAGEMENT OF THE CAMPUS OF THE JAVERIANA UNIVERSITY OF CALI

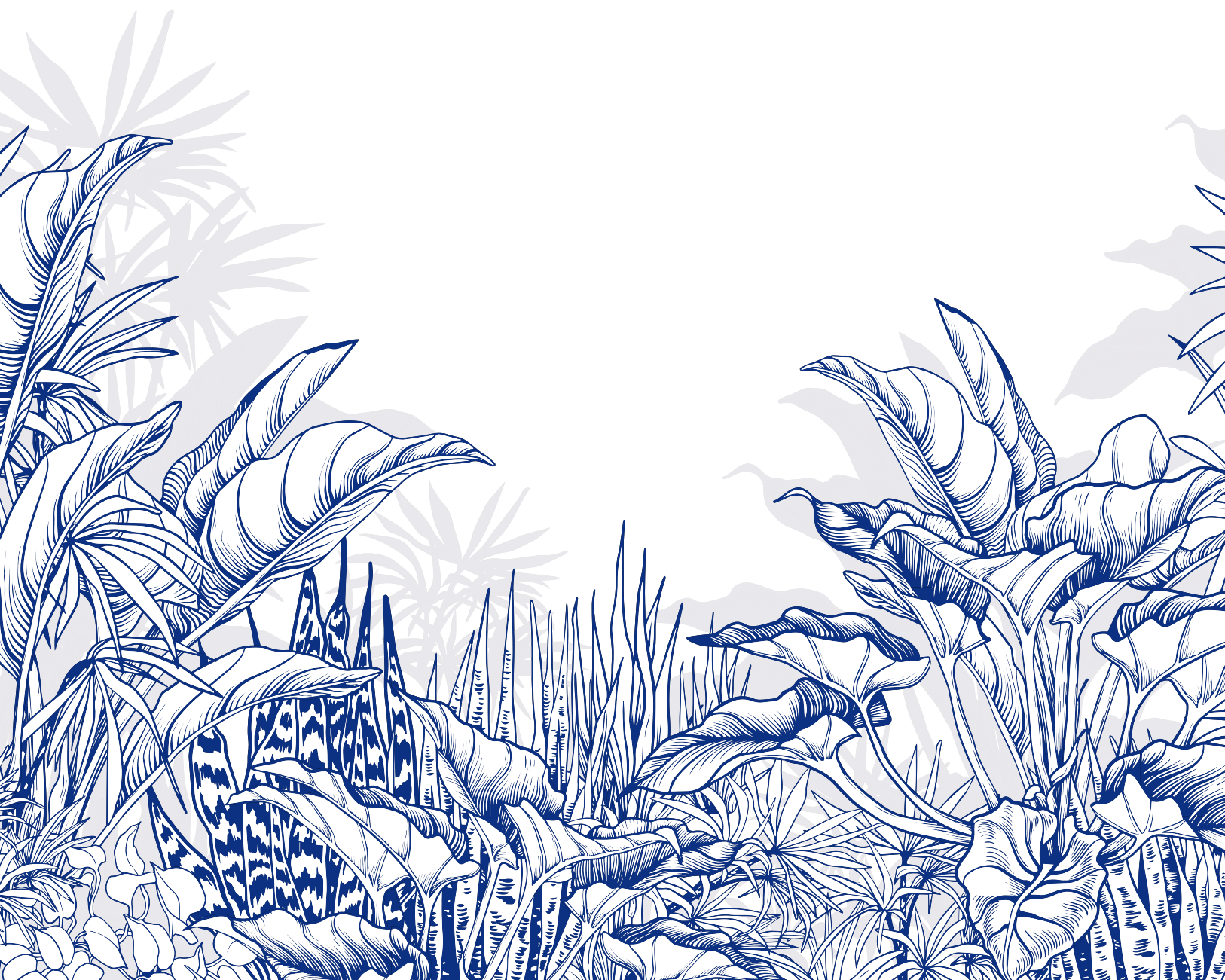


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STRATEGIC PLAN FOR THE SUSTAINABLE MANAGEMENT OF THE CAMPUS OF THE JAVERIANA UNIVERSITY OF CALI

The strategic plan aims **to optimize the resources that the university has designated for the sustainable management of the campus and to organize the multiple actions of its programs**, grouped into major themes, with their respective cross-cutting strategies.

The plan is structured in 5 major programs: Water Resources, Energy Resources, Biodiversity, Recycling and Reduction of CO2 Emissions. In defining these themes or programs, the University was inspired by the Encyclical Laudato Sí, the Universal Apostolic Preferences, the SDGs and the thematic structure of Green Metrics.

Each of the five programs is organized into subprograms, projects and subprojects, depending on the thematic complexity of each program. The programs also include transversal strategies, included in subprograms such as the training of the university's human talent in the different topics addressed by the plan. The subprograms are organized into research projects, semester projects, graduate work and theses, and training workshops for university employees, students, professors and managers. The five programs also have entrepreneurship and outreach subprograms, which in turn take the form of projects and subprojects.

At the subproject level, the planning instrument is taken to the operational planning level, using the Gantt chart. The team that coordinates the sustainable management of the campus has divided up the coordination and follow-up of the different programs and meets weekly to present progress reports and propose adjustments to the aspects that are deemed appropriate, based on the planning prepared for each year.

The plan was presented and approved by the Rector's Committee and has been incorporated in Mega 4 of the Strategic Plan of the University: "Living Fraternity in Our Common Home." The planning instrument has already made progress in the linking of professors of the civil engineering, electronic engineering, industrial engineering, biology and architecture careers who invite their students to develop semester or end-of-career projects on topics that energize and strengthen the sustainable management of the campus.

The strategic plan helped formalize the linkage of the campus to Cali's urban forest network, which includes the green areas of the Berchmans School and the San Alberto Hurtado Community, forming an area of approximately 30 hectares. Finally, the strategic plan has been shared and well received in the network of sustainable campuses of universities in Cali.



Benefits

■ **Systematization and dissemination:** the tool facilitates the collection of data to convert them into information, a process that streamlines the monitoring, evaluation, adjustments, systematization, publication and dissemination of the results, actions of vital importance, given the permanent changes in the components under management.

■ **Cost reduction:** it allows efficient control of resources, leading to savings in the consumption of water, energy and raw materials, thus improving the efficiency of processes and reducing the amount of waste generated.

■ **Regulations:** adaptation of actions in accordance with environmental regulations, controls and internal audits.

■ **Risk analysis and prevention:** prevent, mitigate, control, correct and compensate potential negative environmental impacts.

■ **Contributions to the substantive functions of the university:** with research, training and environmental education programs.



Plan Contents

The first sub-programs include the projects and sub-projects of the respective program and at the end are included the sub-programs of training of human talent on the university campus, dissemination of initiatives and awareness for the realization of initiatives on campus, the houses where members of the university community live and their neighborhoods. Finally, the program that aims to stimulate entrepreneurship in the respective topics.

1. WATER RESOURCE MANAGEMENT PROGRAM

Includes the subprograms of:

1.1. Management of the university's water concession. The university is supplied with water thanks to a concession regulated by the Dagma, the city's environmental authority, whose route was historically designed to supply water to the cattle ranches that existed previously in the sector, and later to the urbanization processes that have been occurring over the years.

The subprogram includes the project for the **management of the irrigation** ditches into which the main concession is internally bifurcated. The project includes the flow **monitoring subprojects for flood prevention** (subprojects: intake, desander, turbidity sensors, and floodgate automation). The project for managing the wetlands fed by one of the internal ditches and the one formed by the aqueduct overflow (subprojects: sediment, vegetation management on its banks, fish farming, educational and recreational uses); and the aqueduct project (subprojects: desander, filters, drying beds, chlorination, chlorination automation, flow measurement for tank supply, flow measurement at the entrance of each building, flow and entrance automation for each building, level sensors for the respective storage tanks, solar panels on the roof of the aqueduct).

1.2. Rainwater subprogram. Most of the university's roofs, terraces and small squares have facilities for rainwater collection and conduction. The plan foresees the impacts of the intensive urbanization process in commune 22, where the university is located and the future impact and availability of water. The plan proposes the gradual construction of a rainwater harvesting system that can be used to irrigate fields and gardens and, in the event of a water shortage, to feed the water to be treated in the aqueduct.

1.3. Water use subprogram. This subprogram includes projects for the installation of **water-saving systems, installation of new drinking water supply points**, promotion of the use of metal water heaters for water consumption, and the project for the installation of mechanical and automatic irrigation systems.

1.4. Wastewater management subprogram

The subprogram covers gray and black water monitoring projects (subproject to replace liquid and solid soaps with ecological cleaning products); **piping upgrades** (separation of gray and black water); **separation of rainwater and wastewater; laboratory water management; campus wastewater treatment plants (WWTP).**

The following subprograms, mentioned in the introduction and common to all five programs, are:

(1.5) Training of human talent in the university community and the region.

(1.6) Dissemination of initiatives and awareness raising.

(1.7) encouragement of entrepreneurship in the area of water resources.

2. BIODIVERSITY MANAGEMENT PROGRAM

This program includes the **Flora, Fauna and Soils subprograms.**

2.1. The flora subprogram. Contains the project for the preparation of the

Harmonization Plan, which enables the agile management of the interventions required to be carried out on the campus before the DAGMA and the coordination of support and activities with the City's Urban Forest Network.

The Harmonization Plan project contains the subprojects for **updating the inventory** of timber, ornamental, fruit and palm trees, including **the phytosanitary management plan**, pruning and fertilization requirements, as well as the adjustments that need to be made to their location in relation to their impact on surrounding elements, such as pipelines, sidewalks and foundations. The subproject to increase the **planting of native species and the expansion of tree coverage**, adapted to the possible future requirements for the expansion of campus infrastructure.

University orchards project. Includes the subprojects of research, design and implementation of different types of orchards, components and automation, adapted to the presence of fauna on campus; the subproject of research and implementation of different forms of germination and planting.



Structural pruning of 2 mango trees as part of the management plan subproject.

University Vegetable Gardens Project. Includes the subprojects of research, design and implementation of different types of vegetable gardens, components and automation, adapted to the presence of fauna on campus; the subproject of research and implementation of different forms of germination and planting.



Vertical urban vegetable garden located in the gastronomy laboratory.

2.2. The Fauna subprogram. Includes the project to **update the inventory** of birds, butterflies and other insects, squirrels, birds, peacocks and iguanas, as well as the project for the management and care of campus fauna and migratory species, with special attention to the subprojects for the management of honey bees and army ants.

2.3. The Soils subprogram. Includes projects for the **characterization and management of campus soils** with organic fertilization, using compost produced in the university's compost bins and in the biofertilizer laboratory; erosion prevention and management.

The subprograms of **Human Talent Development (2.4)**, **Dissemination of Initiatives (2.5)** and **Entrepreneurship (2.6)** contain their respective projects and subprojects.



Law and gastronomy students collaborating with the implementation of the gastronomic garden as part of the training and outreach subprogram.

3. SOLID WASTE MANAGEMENT PROGRAM

3.1. Subprogram: composting of plant waste from the campus and raw waste from restaurants. The **composting** project, which began to be implemented in 2021, with nine composting bins so far, has a composting area of 500 linear meters and these are distributed throughout the campus, in order to reduce the distances of transferring the material from the place of pruning grass, branches and leaf collection. Raw waste from the University's restaurants has also been composted since 2022.



Compost harvested from one of the compost bins.

The subprogram also includes the **biofertilizer laboratory** project, with subprojects on the **preparation and use of biofertilizers, cultivation and application of microorganisms and vermiculture**. The laboratory also includes the area for germination, planting, reception and handling of new materials that will later enter the nursery. The third project includes the harvesting and use of compost and chips produced at the university.



Biofertilizer laboratory and part of the team of gardeners, who are in charge of preparing and using the bisulfates produced there.

3.2. Recycling of other objects and materials subprogram. Includes the recycling of paper, cardboard, plastic, glass, metals, pens, markers, batteries, cell phones, computers and construction materials. It includes **projects to replace non-recyclable plates and cutlery, and to reduce non-recyclable packaging and single-use plastics.**



Operator of the Central Storage Unit (UCA) disseminating the proper classification of solid waste to students of the architecture student group Sketch

3.3. The following subprogram includes the management of toxic waste.

The following are the subprograms that cut across all programs::

3.4. Training of human talents of the university community and the region.

Electronic engineering students are starting to do undergraduate projects in the biofertilizer lab, specifically in automated aquaponics, with remote monitoring and

management, and in humidity sensors and automated irrigation of the lab's vegetable garden.

3.5. Dissemination of initiatives and awareness.

3.6.Undertakings, which includes projects for the sale of compost, vermicompost and chips, as well as consulting and sale of composting and vermiculture kits.

4. ENERGY RESOURCES MANAGEMENT PROGRAM

4.1. Subprogram: Renewable energy sources. It includes the multipurpose **photovoltaic energy** project: parking lot roofs, restaurant roofs, and agrovoltaic energy. This last project contemplates the use of the same land for agricultural production and the installation of photovoltaic panels. And the hydroelectric power project. The feasibility of **generating hydroelectric power** from the irrigation ditches of the university's water concession is being studied.

4.2. Subprogram: Consumption of renewable and conventional energy on campus. The subprogram includes projects to **replace incandescent light bulbs with alternative lighting and high-consumption equipment with more energy-efficient equipment**, as well as introducing methodologies and procedures for managing the **demand for electrical energy on campus.**



Acacias Building and Administrative Building with installation of the solar photovoltaic system.

Then the sub-programs of **training for human talents (4.3), Dissemination and awareness (4.4.) and entrepreneurship (4.5.).**

5. CO2 EMISSIONS REDUCTION PROGRAM

5.1. Subprogram: Replacement of energy-intensive technologies. This includes the project to **replace combustion engines with electric motors**, used mainly in vegetation management and gardening. Electric motors are more ergonomic and reduce noise during use. And the project to measure the **reduction of CO2 emissions through the implementation of photovoltaic energy**.



Electric motors for gardening use.

5.2. Subprogram: Improvement of energy efficiency. Includes audiovisual campaign projects for the responsible use of energy and technological migration.

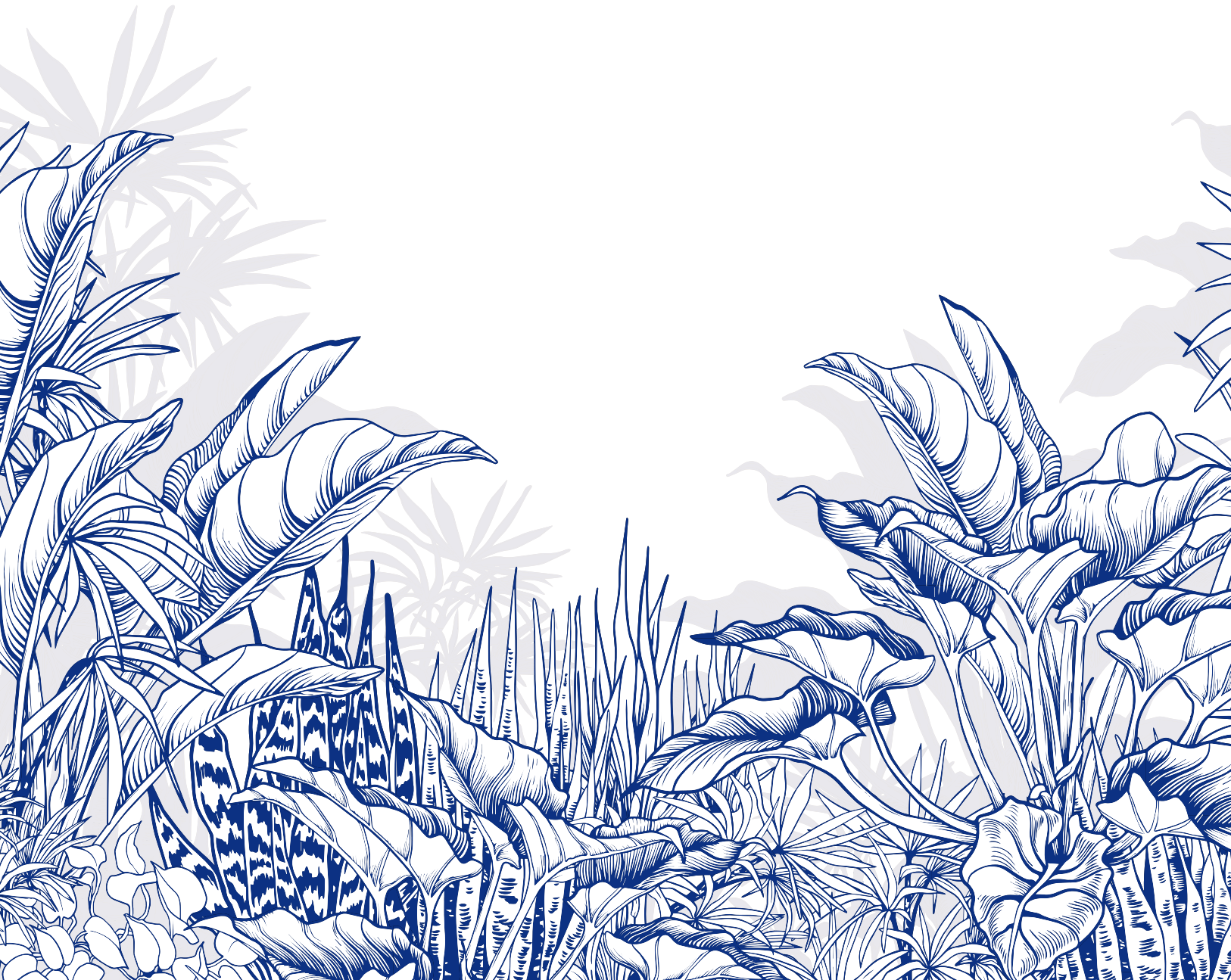
5.3. Subprogram: Encouragement of the use of alternative means of transportation. This subprogram includes **carpooling** projects, encouragement of the use of **electric vehicles**, the project to **encourage the use of bicycles**, and the project to **reduce the area of parking lots**.



University Bike Park.

5.4. Sub-program: training of human talent on campus on the reduction of CO2 emissions. It includes, like the other programs, **research seed projects, volunteering, semester projects, degree projects or theses and workshops on production and responsible use of energy**. The following are the sub-programs of **Dissemination and Awareness (5.5.) and Entrepreneurship**.







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