

# Sustainable Development

## The strategy of Fluminense Football Club

Fluminense Football Club is one of the most ancient football clubs in Brazil, founded in 1902, and responsible for the implementation and diffusion of football in Brazil - the sport that became a passion among Brazilians.

Keeping on with the pioneering process of the club and caring for the concerns of society regarding climate changes, the present management of the club, through its President Peter Siemsen, adopts a modern managing conduct, and according to the vision of the marketing Vice-president at that time, Idel Halfen, created, in November 2011, the Sustainable Development Board.

Initiatives to reduce carbon emissions, to stop its flow, and prevent issues associated to the climate of the planet, already are being adopted by some institutions. However, this movement is still shy among football clubs, and for this reason, we envisioned that Fluminense should, somewhat, embrace this commitment.

The way we encountered and suggest to attain this goal is to adapt the club to a system of service rendering within environmental compliance. This position aims at diminishing the impact of gases such as carbon dioxide (CO<sub>2</sub>) issued on the environment, which contributes to the greenhouse effect and to harmful climate changes.

The reduction of emission of CO<sub>2</sub> (carbon dioxide), among other gases, shall occur through cleaner environmental practices, such as the selective collection of residues, use of reprocessed materials for reuse, reduction, and consequent increased efficiency on the use of energy and transport, etc. On the other hand, the compensation shall occur with the planting of trees that seize carbon dioxide from the atmosphere.

The concept of developing a sustainable system at Fluminense Football Club has its grounds on the chance of reducing costs and, consequently, in promoting a greater visibility of the club brand, in terms of a modern management practice.

Thus, the club commences an action plan that shall promote less waste, economy, energy sources changes, and managing improvement.

The initial job of this new board was to delineate an action plan, and to seek partnerships to develop studies that can point towards the development of sustainable projects.

Recently, on February 18, 2016, President Peter Siemsen, defined the key priorities of Fluminense, as part of our long-term vision:

**Balance with Nature** – contribute to biodiversity with development of reforestation and restoration of the Mata Atlantica biome, and environmental education.

**Appreciation of Natural Resources** – operational actions in training of employees – search of recyclable materials – reduction of waste.

**Reduction of GHG Emissions** – the incorporation of selective collection at the club has a double effect in reducing GHG: it systematizes reuse, and changes the needs of raw materials for several products. Projects for the reduction of emissions are part of our set of methods for the next decades.

### **Planning of Goals**

1 – In 2016, Fluminense Football Club shall calculate the footprint of greenhouse gases – GHG - for Olympic Sports on social activities of its head-office.

The first Sustainability Report shall be published in 2016.

2 – In the 2017-2027 decade, there shall be development of projects seeking:

- Reducing emissions presently generated, thus improving energy efficiency, and reducing wastes;
- Use of renewable and cleaner energy;
- Training of their professionals and athletes in environment sustainability.

3 – Until the year of 2050, the club shall seek to reduce its greenhouse gases emissions, aiming at attaining the goals of the Climate Agreement. (Paris Agreement)

### **History of Actions of Fluminense Football Club by the Sustainable Development Board**

#### **1 - Greenhouse Gases – GHG**

**Football as sports economic activity** - In July 2013, a technical memorandum between Fluminense Football Club and the Institute and Italian Environment Ministry was signed in order to verify the emissions of greenhouse gases related to football activity. All professionals and athletes from the five minor league divisions of the Training Center - CTVL, at Xerem – Duque de Caxias, as well as those from the major league football team, in their daily

activities, were considered for the footprint of greenhouse gases during the year of 2012.

Two kinds of data are essential in football activity, in order to calculate this GHG inventory:

- *data from primary activity - collected data observed from specific facilities owned or controlled by the club,*
- *data from secondary activity - generic or average data from sources published, which represent emissions related to services of the club, activities or products.*

As required by ISO 14064-1 all GHG emissions included in the evaluation considered as direct emissions of GHG, quantified and separately recorded for each GHG, in CO<sub>2</sub> equivalent [tCO<sub>2</sub>e]. The GHG emission of Fluminense in 2012 was of 2,580 [tCO<sub>2</sub>e].



**Olympic Sports and Social Area** – On May 2016, we have agreed with Fundação Brasileira para o Desenvolvimento Sustentável (Brazilian Foundation for Sustainable Development) on a contract to perform the calculation of greenhouse gases within the total area of services that the club offers to its associates. Within 5 months, in October of 2016, we shall present this information, jointly with the first **Sustainability Report**.

## **2 – Energy Efficiency**

On that same year of 2013, Fluminense signed with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from the German government, a memorandum of technical cooperation to verify wastes and inefficiency of electric devices aiming at energy efficiency and the possibility of adopting renewable energies.

The proposals submitted for both units, the head-office and the Xerem Technical Center, presented several measures for adoption, which shall bring a reduction of 360 tCO<sub>2</sub>/year.

**Led Bulbs** – Following the guidelines submitted by the above-mentioned study, the Brazil-Germany Chamber of Commerce invited the club to minister the Course of Improvement with Binational Certificate (COPPE/AHK) **EUREM - European Energy Manager**. Thus, the tricolor student Ignacio Mello submitted a proposal for the development of a project for energy efficiency at the head-office and at the CTVL, Xerem, to be submitted to PROJECTS

## PUBLIC CALL - CPP 001/2015 - **LIGHT SERVIÇOS DE ELETRICIDADE S.A.**

In order to create the proposal of a diagnosis, the student Ignácio Mello had the collaboration of Anima Projetos, and the proposal was submitted to **LIGHT SERVIÇOS DE ELETRICIDADE S.A** and approved on May 2<sup>nd</sup>, 2016, and it is about to be start soon.

This project shall bring the club energy savings and reduction of the emission of greenhouse gases, by changing all the head-office and CTVL's bulbs to Led bulbs, as well as the installation of a **solar heating system** at the locker room of the main filed of Xerem. The resources for this project are totally sponsored by Light in tune with the public call of projects according definition by ANEEL.

### **3 - Water Consumption Reduction**

According to the proposal of sustainable development plan, reduction of natural assets, and reduced emission of greenhouse gases, we are developing three projects related to this goal.

**3.1** - In January 2015, we have changed all taps of CTVL for pressure system taps, thus only allowing water output by touch.

**3.2** - On May 6, 2016, we signed a contract with the company GL Serviços em Saneamento Ltda. – ME, in order to reduce consumption of water and output of sewage at the head-office at Laranjeiras. This service shall be performed in 24 months and the whole project shall be developed and invested by the company, and Fluminense F C shall pay the percentage of 35% on the reduction of consumption and sanitation during the two years contract. All units of consumption reduction shall be assets of Fluminense F C, at the end of the contract.

**3.3** - On May 10, we hired an engineer of the company Lamax to develop the engineering system to install the collection and treatment of rainwater system at CTVL. The resources to pay for this engineer and for the project "as built" shall be borne by the remaining of the donations made by tricolor supporters to the reforestation of Xerem.

This project shall have two stages: the first one in 2 months, collecting waters from the roofs of the CTVL building, facilities of connection boxes and storage unit, 10,000 liters water tank. Then, we shall perform also, in 2 months, the recovery of the surface water of the routes of access to the top of the hill where the CTVL building stands, thus erecting a reception and treatment system for separation of oil and other wastes.

The project developed by the Sustainable Development board has its grounds on data furnished by the Instituto Nacional de Meteorologia – INMET. The monthly average of pluviometric index for the last 30 years in Xerem was the baseline for this project.

month	mm	month	mm
January	422	July	104
February	350	August	101
March	286	September	104
April	164	October	229
May	105	November	269
June	65	December	185

#### **4 – CTVL Reforestation**

On October 17, 2014 there was the launching of the project for reforestation of CTVL, with the participation of supporters to finance, to identify, and divulge the project.

The minimum donation for the project was established at R\$15,00 (fifteen Brazilian reais) with no maximum value stipulated. As an award for these donations the Institute developed the idea of a shirt allusive to the action, which was created and manufactured with organic cotton and by sustainable procedures by Osklen. Each R\$150,00 (one-hundred and fifty Brazilian reais) donation entitled the donor to one of these shirts.

The concept of participation of supporters was a success, and in March 2016, we planted 3,600 saplings of Mata Atlântica, of the biome where Rio de Janeiro is located, in approximately 20,000 square meters.

The Companhia Estadual de Águas e Esgotos - CEDAE accepted to cooperate with Fluminense Football Club in the execution of this project. The company was in charge of forest engineering, saplings, and planting. The service was paid in equipment for reforestation.

It is important to emphasize that CEDAE adopted the program Replanting Life (Replantando Vida) in order to prepare the soil and planting. This program has been a socio-environmental initiative of the company, for more than a decade, using the labor of inmates on the semi-open system as a tool to resocialization and sentence reduction. This program is developed by CEDAE and Fundação Santa Cabrini, in charge of the State of Rio de Janeiro prison system.

Some athletes and directors also participated in this planting, bringing in higher scope to the project.



## 5 – CTVL Sewer Treating Station

High index anaerobe systems are being used increasingly in treating domestic sewers, especially in developing countries, due to the low need of operation and maintenance, besides low investment, low production of slime and the possibility of use of the biogas it produces. Therefore, Fluminense F C had the support of the brothers, Adilio and Angelo Barros, owners of AMBIO, to execute this project with only the cost of equipment.

In tropical regions, with temperatures between 20 e 35°C, the anaerobe process is strongly indicated to treat domestic sewers (Haandel and Lettinga,1994).

Biofilm treatments as post-treatment of anaerobe techniques serve to reduce the size of treatment units, as well as to reduce electric energy need to operate the system.

The solution submitted by AMBIO incorporates the technique of the UASB reactor in double stage on an anaerobe filter with plastic media filling.

The innovation of the solution proposed by AMBIO Ltda. lies on the UASB double stage – a technological innovation that aims to reduce even more the energy requirements of operations, as well as to ensure a superior quality effluent, adding a posterior anaerobe filter with diverse sized medias to its filling, thus enabling the formation of stratified and synergetic biota.

The anaerobe filter is a tank containing filling material that forms a fixed bed. On the surface of each part of the filling material there is fixation and development of microorganisms, which also group, as flakes or granules, in the interstices of this material. Soluble organic composts in the affluent sewer get in touch with the biomass, getting around through surfaces of the biofilm or the granular lime, being then converted into intermediate and final products, more specifically methane and carbon dioxide. Therefore, they are reactors with flow through the active lime, with adhered or retained biomass on the fixed bed.

The anaerobe filter as solution to treat after UASB is a traditional solution to treat sewers. They can be used both to treat concentrated and diluted sewers. Thus, although they might be used as main unit in the treatment of sewers, they are more adequate for post- treatment (polishing). They are also suitable for post-treatment of other anaerobe units, ensuring high operational safety and greater stability to the effluent, and furthermore they can be advantageously used in the post-treatment of other processes.

The effluent of a anaerobe filter generally is highly purged with relative low concentration of organic matter, included dissolved matter.

The anaerobe filter conceived by AMBIO is a tank containing filling material that forms a fixed bed. At the first stage of the filling there are higher dimension filtering elements with 40 centimeters height; the second stage of the filling has 40 centimeters height and is formed by filtering elements of smaller dimensions; the third stage of the filling has 40 centimeters height and is formed by filtering elements of big dimension.



## **6 – Selective Collection**

### **The Significance of Selective Collection and Sustainability**

Selective collection is a system of collection of recyclable material, previously separated at the producing source (residences, companies, schools, businesses, industries, health units). The separation of recyclable materials plays a strategic role in the integrated management of solid waste, in several aspects: it stimulates the strategic habit of separating waste at the source for its reuse, it promotes environmental education oriented to the reduction of the consumption and wastage, it generates jobs and income, and it improves the quality of the organic matter for composting.

Another benefit of the selective collection system is the possibility of measuring the index percentage of the material diverted from the sanitary landfills (GRIPPI, 2001).

According to Waite (1995), among the environmental advantages of the selective collection we can emphasize: the reduction of the use of virgin raw material and economy of renewable and non-renewable natural resources; economy of energy in materials reprocessing compared to extraction and production as of virgin raw materials, and valorization of secondary raw materials, and reduction of waste disposal in sanitary landfills and consequent environmental impacts.

It should be mentioned as well, the economic valorization of recyclable materials and their potential to generate businesses, jobs, and income. Selective collection, besides contributing significantly to urban sustainability, is gradually incorporating a social inclusion profile and income generation for the most needy and excluded sectors, with no access to the formal work market (SINGER, 2002).

The selective collection system at Fluminense F C was the starting point of the request made by President Peter Siemsen, hiring the NGO Associação Ecológica Projeto Lagoa de Marapendi – Ecomarapendi (Ecological Project Marapendi – Ecomarapendi Lagoon). The contract, dated February 20, 2013, aimed at making a diagnosis with identification and formulation of the management process of solid wastes generated.

The diagnosis had its primary goal to be the tool to assess the aspects of the institution related to waste production. Therefore, the following specific steps were taken:

- Collect data related to the management of solid waste of the club;
- Analyze information to evaluate issues regarding the subject;
- Indicate current legislation related to solid waste management;
- Suggest possible actions that adequate compliance by the enterprise of pertinent laws. As a result from this task, we sought to offer an uncomplicated and very well signalized system, with the premise that club members and visitors are not obliged to follow the regulations of the club, but to follow them without sacrifices.

The strategic arrangement of the bins for selective collections in the external and more visible areas attracts persons engaged to the environment cause.

The first step to this selective collection system, with separation, began in December 2013, when the club made a three year contract with the company **Videverde Compostagem Ltda.** Thus, the collection of organic residues created at Laranjeiras began to be collected and sent to be transformed into organic compost, thus reducing to zero the emission of greenhouse gases in this issue. Since May 2016, with the extension of this contract to CTVL, Xerem, we can say that Fluminense does not emit greenhouse gases in all the organic waste produced in its facilities.

For administrative reasons related to changes in the operational system of collection of residues at the head-office, only after hiring the company Sanatto to perform internal transportation of these residues, on September 10, 2015, the selective collection system had its operational start-up.

In December 2015, the Internal Rule “Carlos Castilho” was published, stating that all employees, athletes, concessionaires, members, and visitors shall be informed and shall discharge waste according to this rule:

**Recyclable Residues**

i.e.: Paper, cardboard, plastic, glass, metal

These residues should be discarded in the **GREEN** bins or in places with the indicative label.

**Regular Residues**

i.e.: All other residues.

These residues should be discarded in the **RED** bins or in places with the indicative label.

The other residues, such as bulbs, electric electronics, kitchen oil, organic, and infective contagious residues are mentioned in this rule, but are not collected according to procedures of the areas generating such products.

There is a monthly publication of a Selective Collection Report

## **7 - Turkey Lecture “Sustainable Development in Football: A Strategy of Fluminense Football Club”**

On October 5, 2015, Fluminense Football Club was represented by its Sustainable Development Director at the *Meech International Symposium on Sustainable Mining and Processing 4 – 9 October 2015, Antalya, Turkey*.

In the seminar, there was the presentation of the work that Fluminense has been organizing at the Sustainable Development Board, with emphasis to some projects such as the steps performed related to GHG issue, the proposals for Energy Efficiency, reforestation at Xerem, and the possibility of new projects.

## **8 - Joint venture between Fluminense Football Club and Fundação SOS Mata Atlântica – May 13, 2016**



FLUMINENSE  
FOOTBALL CLUB

On that date, Fluminense Football Club once again made history, signing a memorandum of intent placing it as the first club in the world to conjoin the preservation and restoration of one of the five most significant biomes in our planet - Mata Atlântica.

The cooperation proposal between *Fundação SOS Mata Atlântica* and *Fluminense Football Club* is an innovative opportunity within the Brazilian football universe for the promotion and strengthening of the cause, and the environmental agenda of preserving the biome of Mata Atlântica.

An unedited initiative that shall connect one of the most expressive football teams with one of the main symbols of the environmental movement in the country

Moreover, the cooperation becomes more relevant because we are experiencing a period of wide social and media interest on the matter of preservation, and mainly on climate changes, after the COP 21, in Paris, in November 2015. It is also justified by the significance of the biome, containing only 8,5% remnants of the initial coverage, and comprising 17 Brazilian states, 72% of the Brazilian population living in 3429 municipalities producing approximately 70% of the domestic GDP.

The cooperation and partnership with *SOS Mata Atlântica* and *Fluminense Football Club* aims at creating also new horizons in the agenda of football and environment, bringing near passion and life quality, since the main states that experience this sports culture rely on services rendered by Mata Atlântica to perform their functions, either in the sports or social scopes.

Finally, we believe that this unique moment in the Brazilian history of football may influence the supporters of Fluminense, our affiliates, and all stakeholders in developing a new environmental awareness within the football culture in the country.

### **Communication and Brand**

Conveying the partnership placing the logo of *SOS Mata Atlântica* in the major league team's shirt of *Fluminense Football Club* throughout the year of 2016, as of May15.

The cooperation also consists in divulging the partnership and social and education contents in medias of relations of both organizations, such as social networks, newsletters, press agencies, campaigns, and promotional actions during championship games to disclose commemorative dates (i.e. World Environmental Day, World Tree Day) among other strategies to be developed by the communications and marketing areas of both organizations.

### **30<sup>th</sup> Anniversary of Fundação SOS Mata Atlântica**

Celebrate the 30<sup>th</sup> anniversary of *Fundação SOS Mata Atlântica* in a game to be defined in the months of September and October 2016.

On the game there shall be the joint entrance of the mascots of Fluminense and of *SOS Mata Atlântica*. In the stadium, *SOS Mata Atlântica* shall place an information desk presenting its programs and projects to fans, and also the project with partnership with Fluminense.

*In loco*, there might be other relationship actions, such as the creation of information banners, involvement of supporters, supporting members, among others. The aim is to make the day a big celebration of the partnership and of the environmental cause in defense of the *Mata Atlantica* biome.

### **Program Forest of the Future**

The program **Tricolor Forest of the Future** aims at gathering the civil society, landowners, private initiative and the Government to restore the areas with native species of *Mata Atlântica*, which contribute to the preservation of water and increment of biodiversity. Among other objectives, we point out carbon seize and maintenance of biodiversity.

Develop a joint campaign through a crossfunding platform (collective finance between companies and individuals) to the feasibility of forest restoration between supporters and interested companies in supporting the initiative that shall consider the forest restoration, in an area to be suggested between the parties and approved by the technical team of *Fundação SOS Mata Atlântica*, in the State of Rio de Janeiro – in an area of approximately 10 hectares involving planting 25.000 native saplings.

We also point out that *Fundação SOS Mata Atlântica*, within the scope of the Forests of the Future program, shall promote the management of the forest restoration of the area, for five years, from the technical approval of the area or planting, maintenance for two years, and monitoring for three years. We have also considered a half-yearly submittal of planting reports, and the hiring of an independent auditing company (BDO Brazil) to evaluate the restored area.

We also emphasize that the quantity of saplings, if the prospection initiative by both organizations is considered feasible, shall entitle *Fluminense Football Club* to be the first football club in the country to have Naming Rights on an reforestation area, which can be called Fluminense Forests or yet, at its discretion, set off CO2 emissions from part of its activities.

### **Environmental Education**

*Fundação SOS Mata Atlântica* shall make five lectures, of two hours each, in five public schools of the neighborhood of Xerem, partners of *Fluminense Football Club*.

There is also an action at the Xerem Training Center. Besides environmental education, there can be also actions of symbolic planting and volunteering, with the involvement of supporting members and Fluminense players.

There is also forecast of a *showcase* in the head-office of Fluminense, in Laranjeiras, to divulge the partnership, present *Fundação SOS Mata Atlântica*, and the Mata Atlantica biome.

We also point out that the itinerant project of *Fundação SOS Mata Atlântica – A Mata Atlântica é Aqui* (Mata Atlantica is Here) – shall be in the city of Rio de Janeiro, in May, 2016. This enables the monitored visitation of minor league players of Fluminense, from 9 to 20 years, to the project, to promote their education and sensitization to the environmental theme.

### **Private Reserve of Natural Heritage (RPPN)**

Support Fluminense Football Club in creating a Private Reserve of Natural Heritage - RPPN with 5 thousand square meters.

### **9 – On-going Projects**

- Solar Heating for the Laranjeiras water park
- Solar Heating for the lodging of the Training Center Vale das Laranjeiras - Xerem

Therefore, an innovative initiative requires extra energy due to several obstacles to overcome. In a football club, winning matches, winning titles, and having excellent players seems to be the goal of any administration. However, the use of sustainable development concepts in units may also bring key economic factors for a successful club. The procedures adopted by the club shall also create visibility, besides demonstrating Fluminense's concern with the future of its athletes, supporters, and inhabitants of our planet.

Climate change has been appointed as one of the main obstacles hindering the application of concepts of sustainable development in many organizations.

Fluminense Football Club wishes to take on its share of responsibility with goals of reduction of emissions, increase of energy efficiency, and use of renewable energies.

**Luiz Carlos Rodrigues**  
**Board of Sustainable Development**  
**Fluminense Football Club**