

FCUL best practices to promote a sustainability agenda

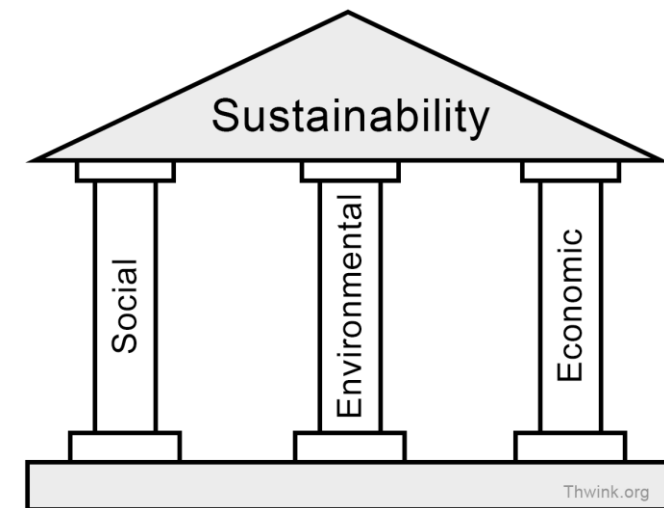


Margarida Santos-Reis

FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DE LISBOA
ALAMEDA PEDRO NUNES

Sustainability@CIÊNCIAS is an initiative of FCUL to:

- promote **sustainability principles** through teaching, research, and interaction with society;
- implementing **best practices** on the school campus;
- promote an innovation ecosystem for sustainability on the school campus by hosting monitoring and experimentation projects in all **sustainability pillars**



The Opportunity

- **Quality Education** (Ciências is ranked among the top 150 universities in the world in the area of Natural Sciences and Technology according to 2018 QS World University Rankings)
- **Internationally recognized scientific competence** (interdisciplinary knowledge generated in its 10 departments and 21 R & D units -> 90% classified as Excellent)
- **Capacity for innovation** (TecLabs - 30 companies, 15 Start Ups and 4 Spin Offs in the last 10 years)
- **Solidarity Community** and committed to the challenges of sustainability in its environmental, economic and social dimensions (multiple initiatives)

The Motivation



THE GLOBAL GOALS
For Sustainable Development

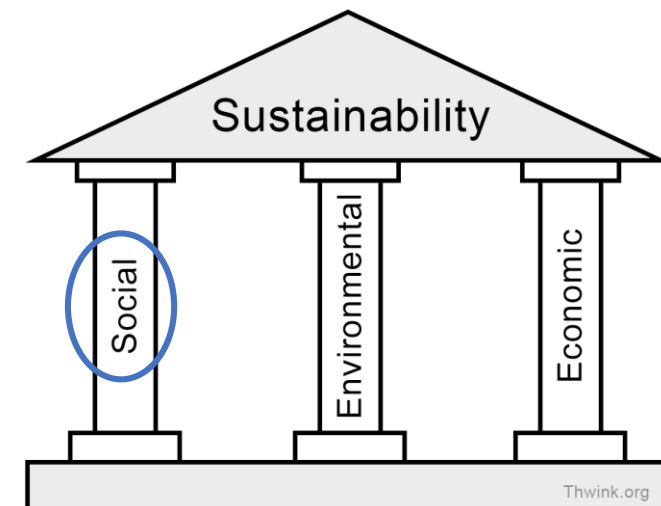


ciências Solidária 😊

In 2016 a group of Ciências collaborators formed a private non-profit association with the purpose of supporting the most deprived population in college (students, workers and former workers).

<http://csolidaria.campus.ciencias.ulisboa.pt/pt/start-page/>

The Social Pillar



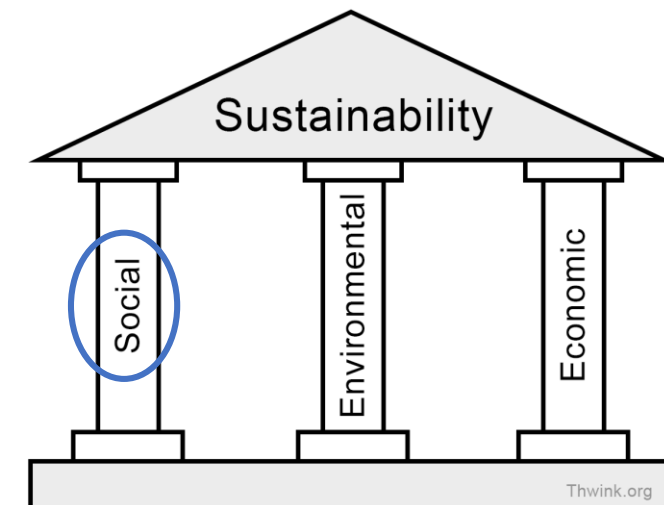
ciências Solidária 😊

Identification / monitoring of situations of need with the support of FCUL services.

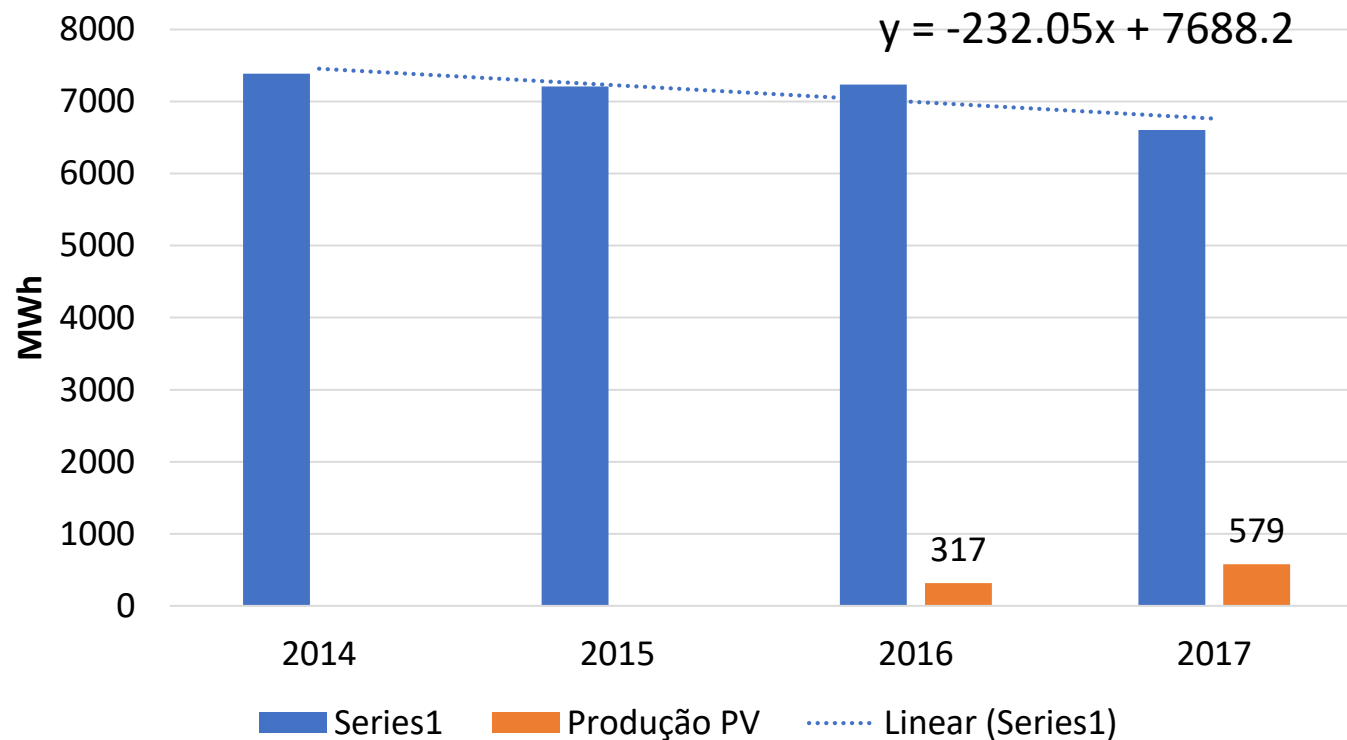
Fund raising through membership fees, revenue from solidarity events (eg concerts, Christmas sales), business support, (...).

Support in situations of shortage, e.g. social passes and/or meal allowances for students, (...).

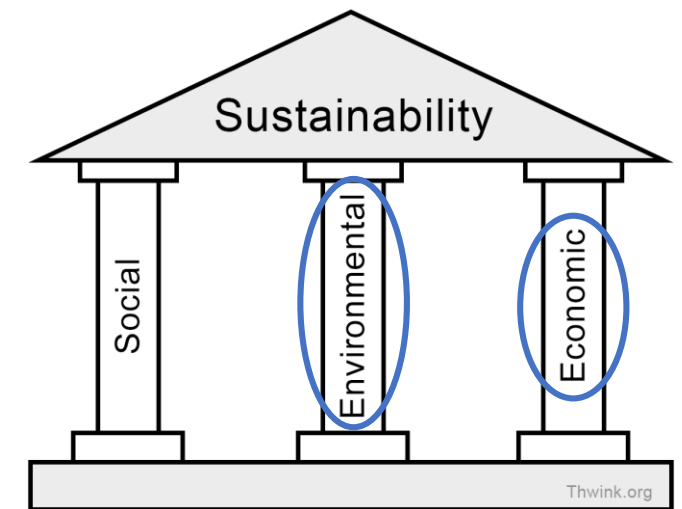
The Social Pillar



Energy: option for a path characterized by progressive (continuous) increase of energy efficiency.



The Environmental and Economic Pillars



Energy Best Practices

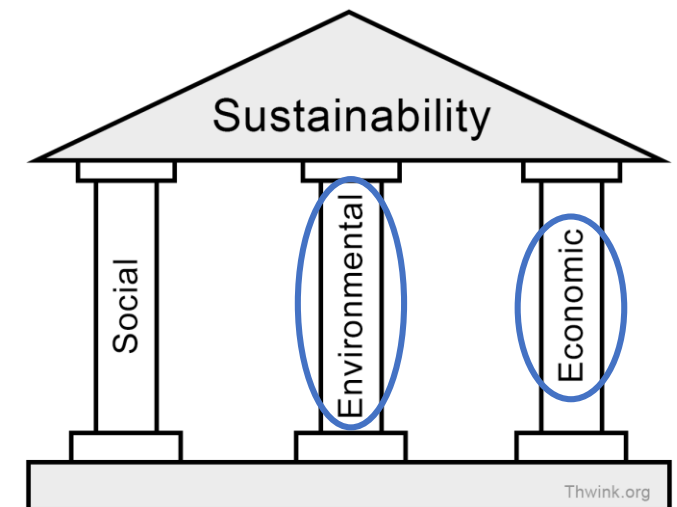
Actions taken:

- Acquisition only of LED bulbs (as of 2013)
- Phased replacement of air conditioning equipment (starting with the most obsolete)
- Progressive (slow) approach of set-points from centralized heat/cold production systems to external conditions

Actions planned:

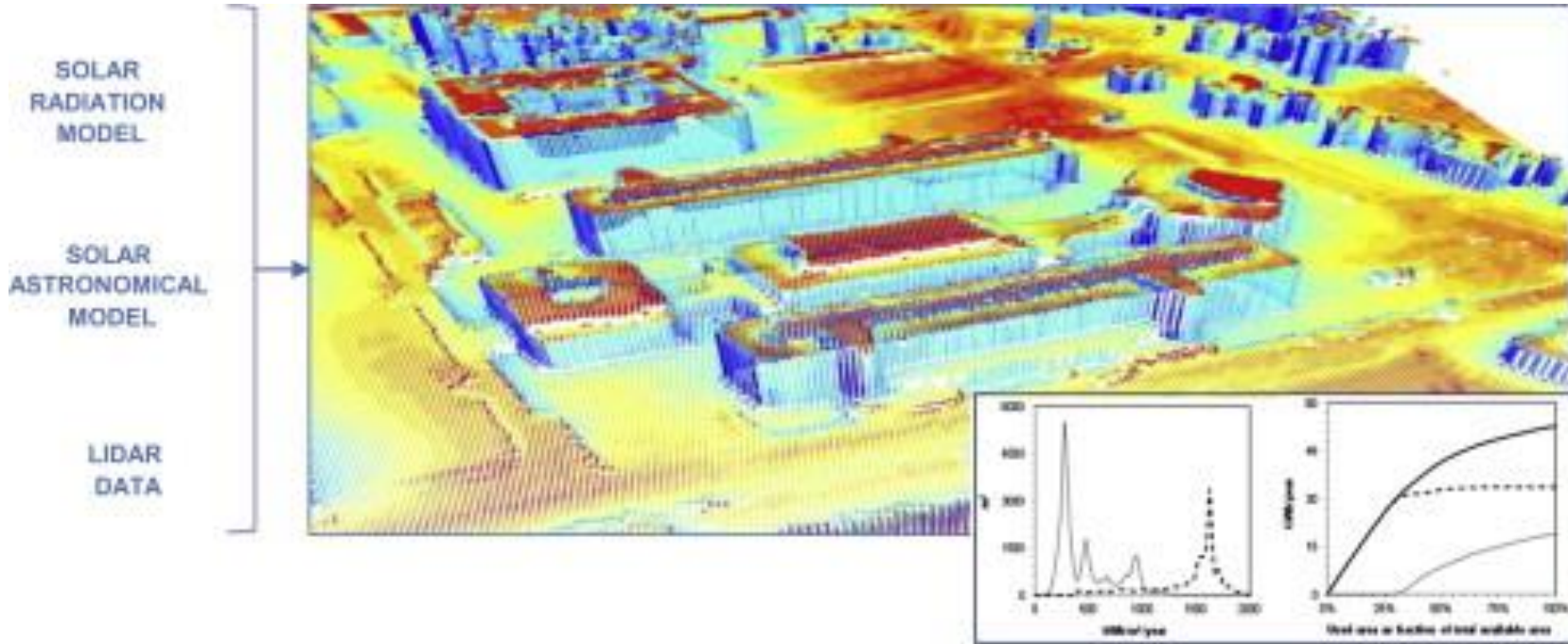
- Installation of inverters in ventilation/air conditioning systems (reduction of flow rates)
- Introduction of automatic systems developed locally for natural ventilation in buildings (half-seasons)
- Replacement of glazing and frames on south façades by frames with thermal cut and double glazing

The Environmental and Economic Pillars



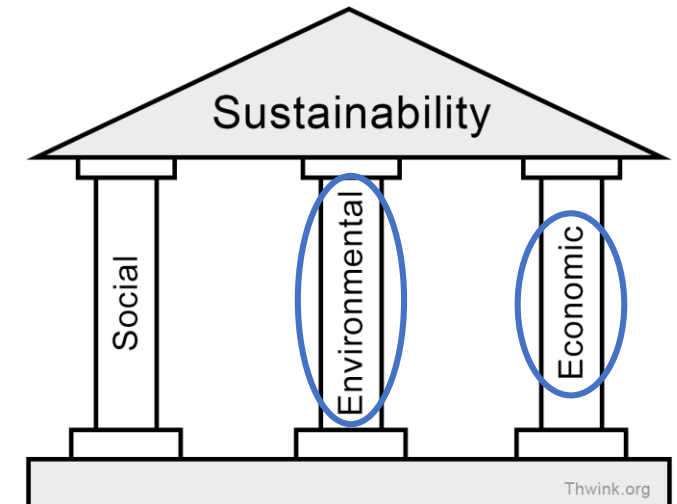
Energy Best Practices

Determination of the FCUL's buildings solar potential

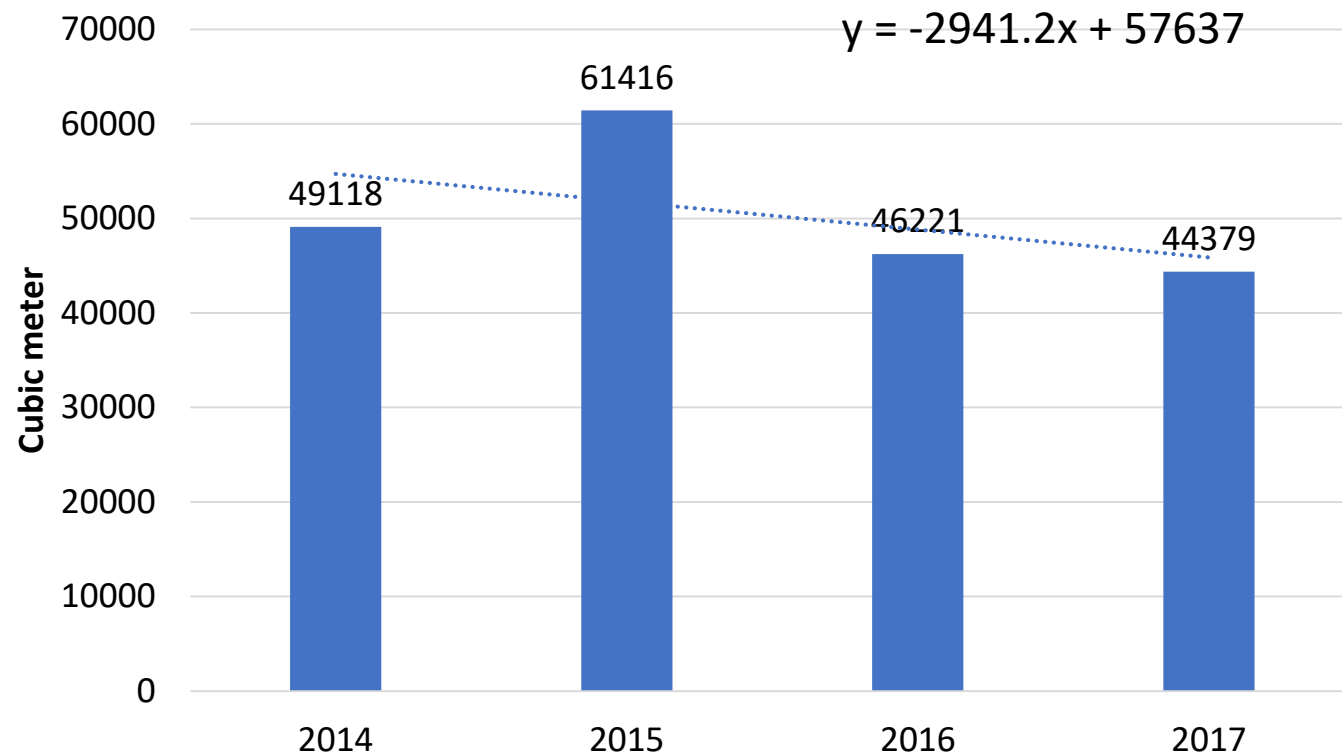


Redweik, P., Catita, C., & Brito, M. (2013). Solar energy potential on roofs and facades in an urban landscape. *Solar Energy*, 97, 332-341 (BEST PAPER AWARD).

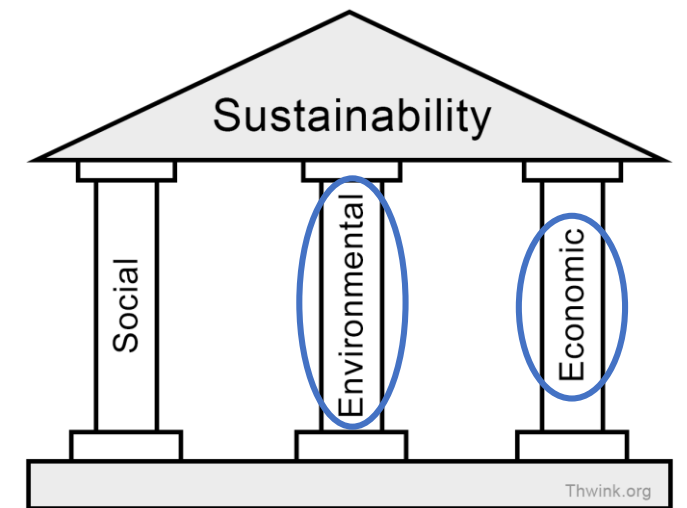
The Environmental and Economic Pillars



Water: option for a path characterized by progressive (continuous) reduction in water use.



The Environmental and Economic Pillars



Water Best Practices

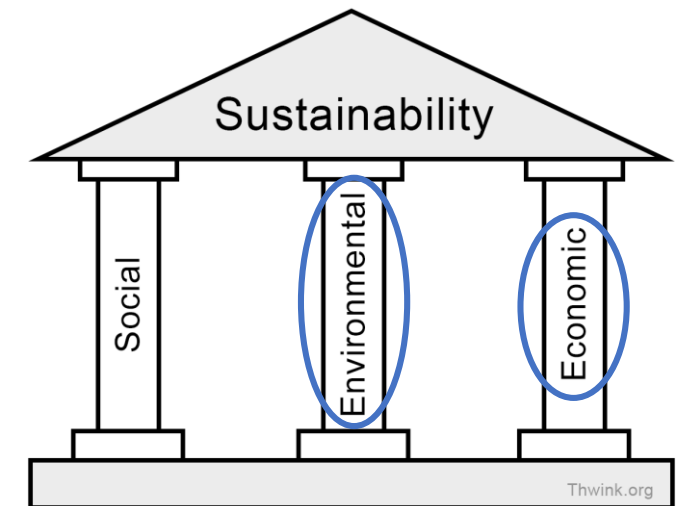
Actions taken:

- Identification of leaks in underground pipelines and their replacement by new pipelines, preferably at the surface
- Gradual (very slow) decrease in distribution pressure inside the campus
- Rationalization of irrigation

Actions planned:

- Continued replacement of buried pipelines by surface pipes
- Continued decrease of internal network pressure
- Changes in landscaped spaces for replacement by Mediterranean plants (reduction of irrigation needs)

The Environmental and Economic Pillars



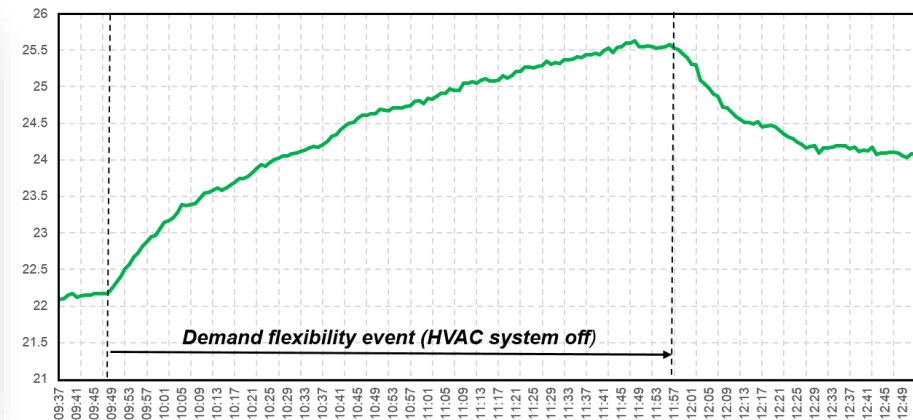
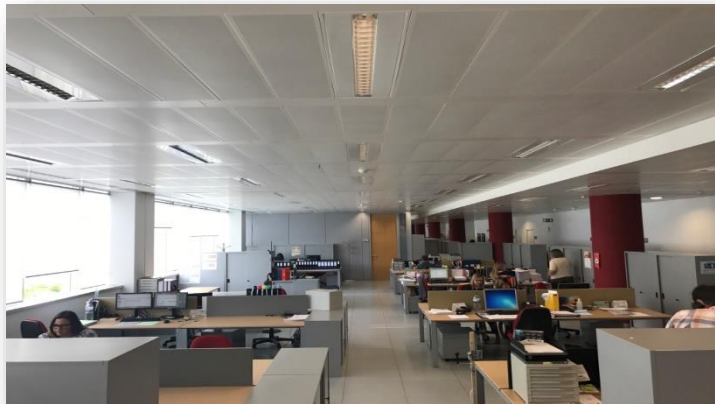
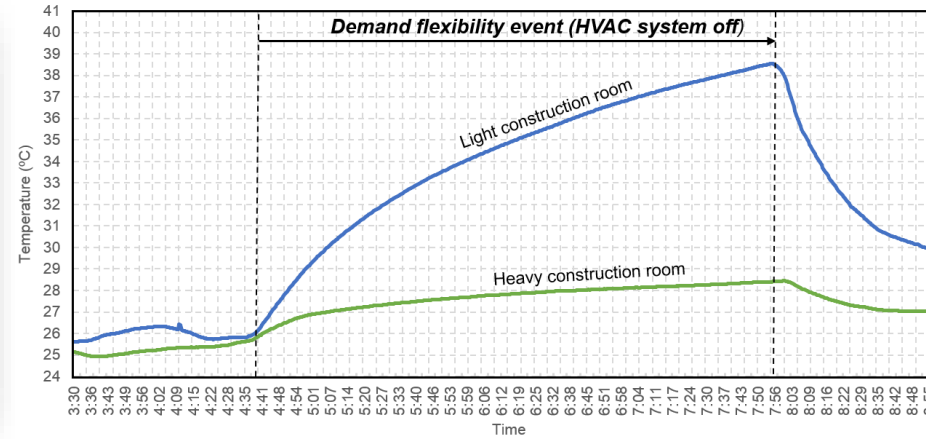
Energy and water best practices pilot study: FCUL's Green Roof



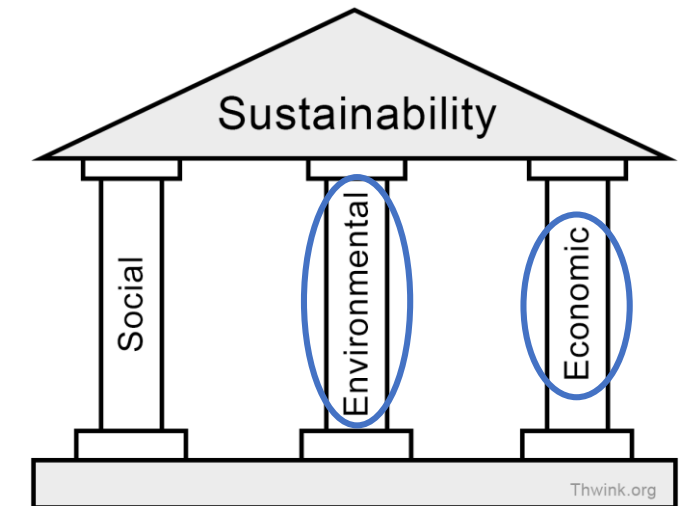
The Environmental and Economic Pillars



Study of solutions and strategies of natural ventilation to control thermal comfort and air quality in indoor spaces



The Environmental and Economic Pillars

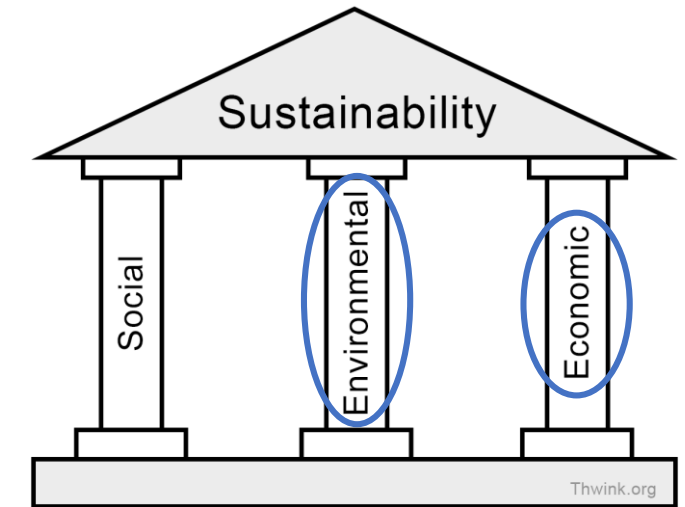


Test cell of economical insulation and ventilation solutions for precarious housing

FCUL Solar Campus



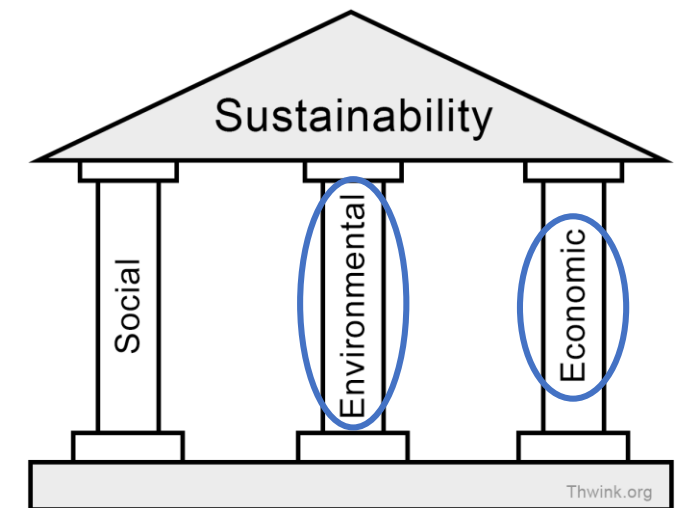
The Environmental and Economic Pillars



Waste: option for a path characterized by progressive (continuous) reduction of residues production and re-use.

- Ciências produces annually approximately 300t of undifferentiated waste and 150t of recyclable waste (35t paper, 25t glass, 10t plastic and 80t organic) which are collected through the CML collection circuit
- Approximately 18t of waste have special disposal conditions (paper, waste electrical and electronic equipment, batteries, etc.) are also sent annually to the licensed operator.

The Environmental and Economic Pillars



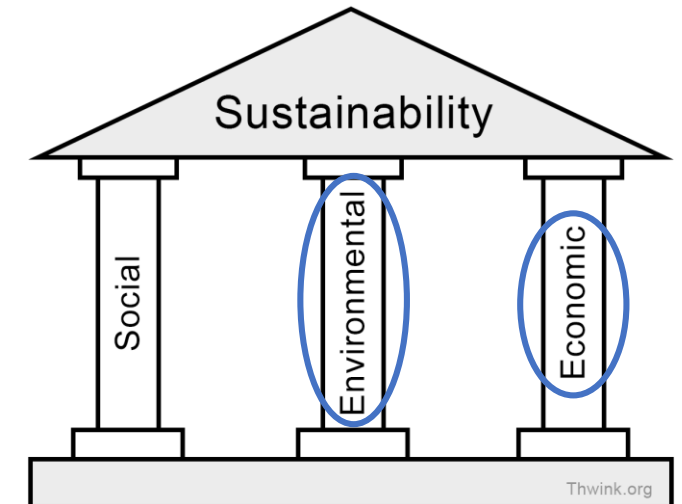
Waste Best Practices

Actions taken:

- Ecopoints located in strategic areas with the aim of maximizing collection.
- Small ecopoints inside buildings.



The Environmental and Economic Pillars



Waste Best Practices

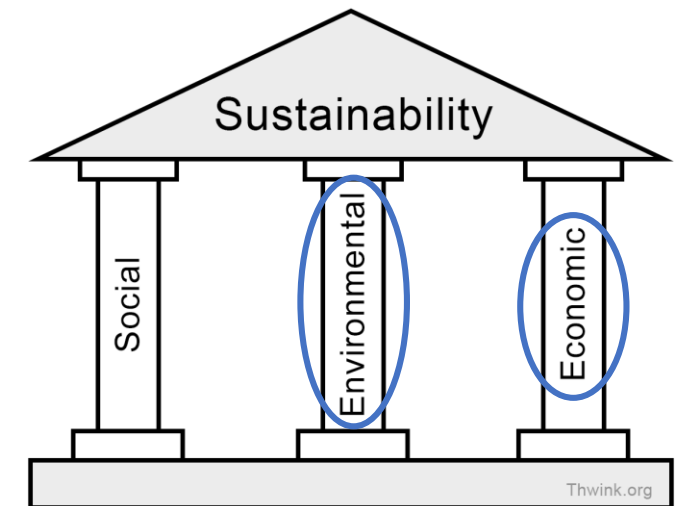
Actions taken:

Valorization of organic waste (composting):
annual production of about 11t of compost from 40m³ of waste



Horta FCUL: <https://ciencias.ulisboa.pt/pt/tags/horta-fcul>

The Environmental and Economic Pillars



FCUL as an agent of transformation (Teaching environmental-related issues @ FCUL Campus)



FCUL as an agent of transformation (Permaculture workshops)



Horta FCUL: <https://ciencias.ulisboa.pt/pt/tags/horta-fcul>



FCUL as an agent of social
mobilization
(Interaction with society @FCUL Campus)



Thanks for Your
Attention

mmreis@direccao.fc.ul.pt