



Πολυτεχνείο
Κρήτης

Green University



**A SUSTAINABLE
GROWTH STRATEGY FOR
TUC**

Highlighting the facts



- **Fact:**

TUC's operational budget for the fiscal Y2015 was approximately 60% less than the Y2008, corresponding to 1.2 M€

- **Fact:**

Energy related expenses for 2012 were 762 K € , which corresponded to 30% of total OPEX.

- **Fact:**

Freshmen students increased by 25% for 2014 and 15 for 2015.

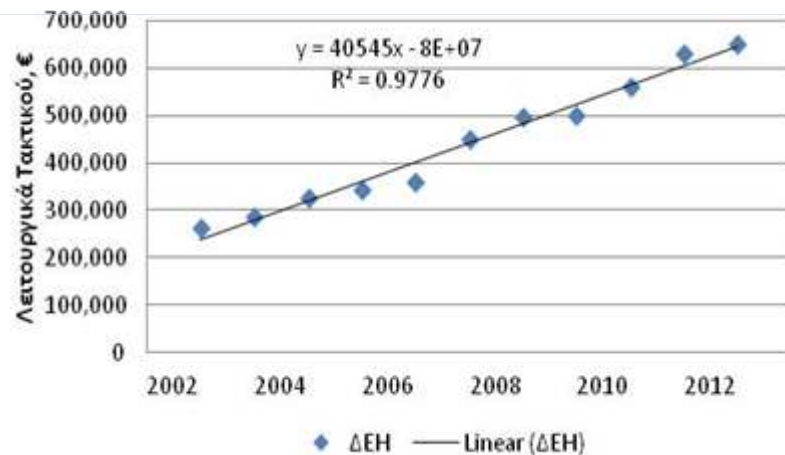
...a non sustainable situation



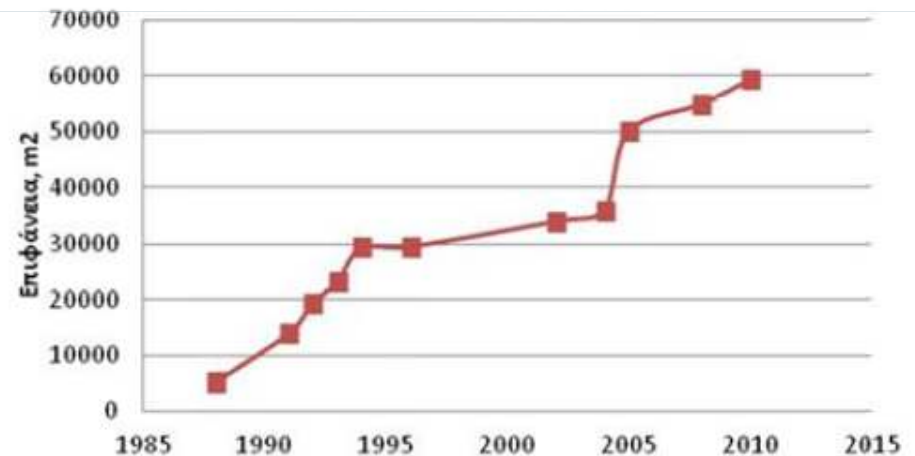
Until recently, energy consumption evolution in TUC was linear...

...in correlation to the TUC's built surface

Πολυτεχνείο Κρήτης -



Κτηριακές Υποδομές στο ΠΚ



Conclusions



- In 2015 there was a fiscal deficit in TUC's budget of 300K € despite severe spending cuts.
- Given the cumulative effect of the students number increase on the OPEX, it is estimated that the problem will intensify in the next 5 years.
- It was urgent to deploy a plan for energy saving and cost reduction.

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- On June 2013 a viability action plan was introduced, focusing on the mid-term target of decreasing energy consumption by **20%** and long-term target of decreasing energy consumption by **60%** - **Savings + Production**
- The plan provisioned actions towards:
 - **Energy spending reduction**
 - **Water spending reduction**
 - **Paper usage reduction**
 - **Recycling**
- Energy reduction measures focused on two directions
 - A. Measuring and analyzing energy consumption data in order to assess potential savings margins.
 - B. Undertaking immediate actions towards energy saving and establishing **quick wins**

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Direction A: measuring and analyzing



- Completed actions:
 - ✓ Installation of 18 real time measurement devices in every Medium-Low Voltage transformer in Campus
 - ✓ Real time measurement and control devices in all student dormitory rooms
 - ✓ Custom made software, to track and record, heating oil deliveriew
 - ✓ Campus real time energy consumption map (<http://www.tuc.gr/3879.html>)
 - ✓ Energy consumption data opened for everyone interested

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Direction B: quick wins (1/2)



- **Completed actions:**
 - **Awareness**
 - ✓ User awareness increase with every available channel (Web campaigns, banners, student contests etc)
 - **Operational and space usage changes**
 - ✓ Consolidation of all TUC's activities inside the Campus instead of using dispersed buildings inside the town.
 - ✓ Collaboration with labs using energy greedy equipment to change the usage profile

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Direction B: quick wins (2/2)

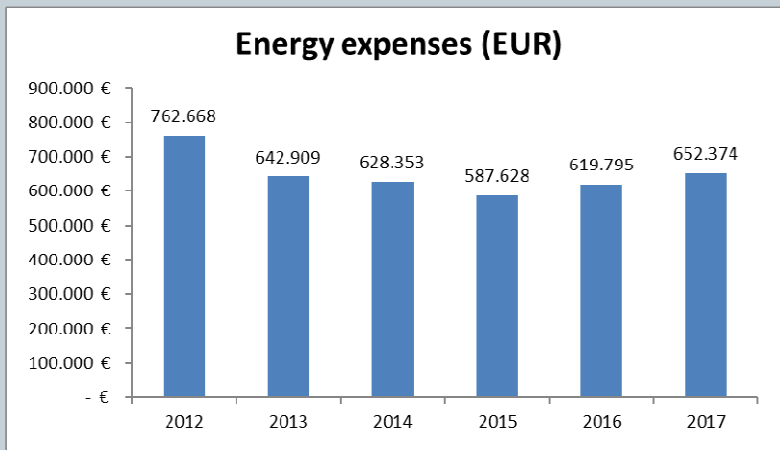
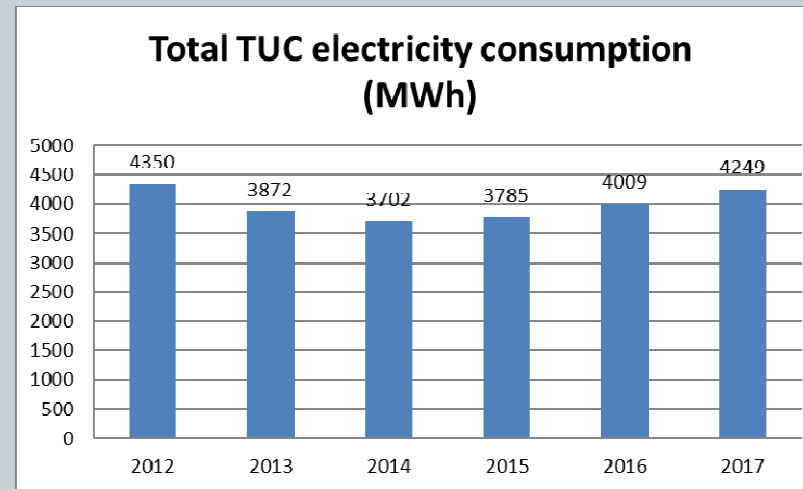
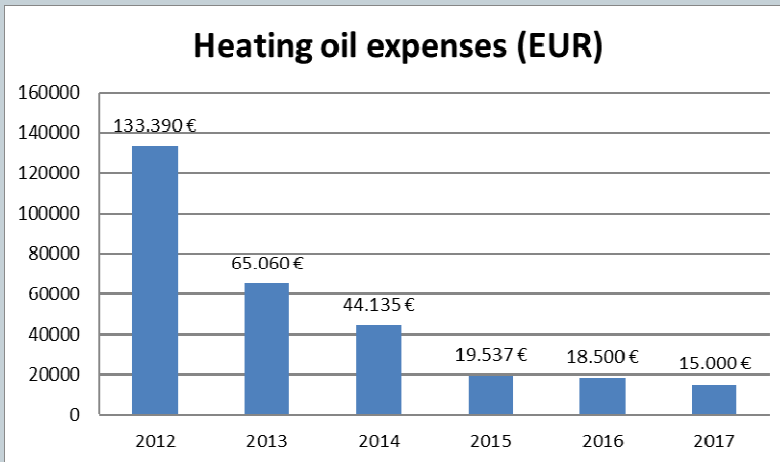


- **Completed actions**
 - **Lighting**
 - ✓ Upgraded the sports facilities lighting equipment with LED
 - ✓ Upgraded the campus street lighting infrastructure with magnetic induction technology fixtures.
 - **Heating/Hot Water Supply**
 - ✓ Gradual switch from heating oil burners to A/C and Heating Pumps.
 - ✓ Solar hot water installations maintenance and reconfiguration
 - ✓ Gradual replacement of the most energy inefficient doors and windows installations with modern ones (w. thermal breaks, low E glazing etc)

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Results related to energy savings

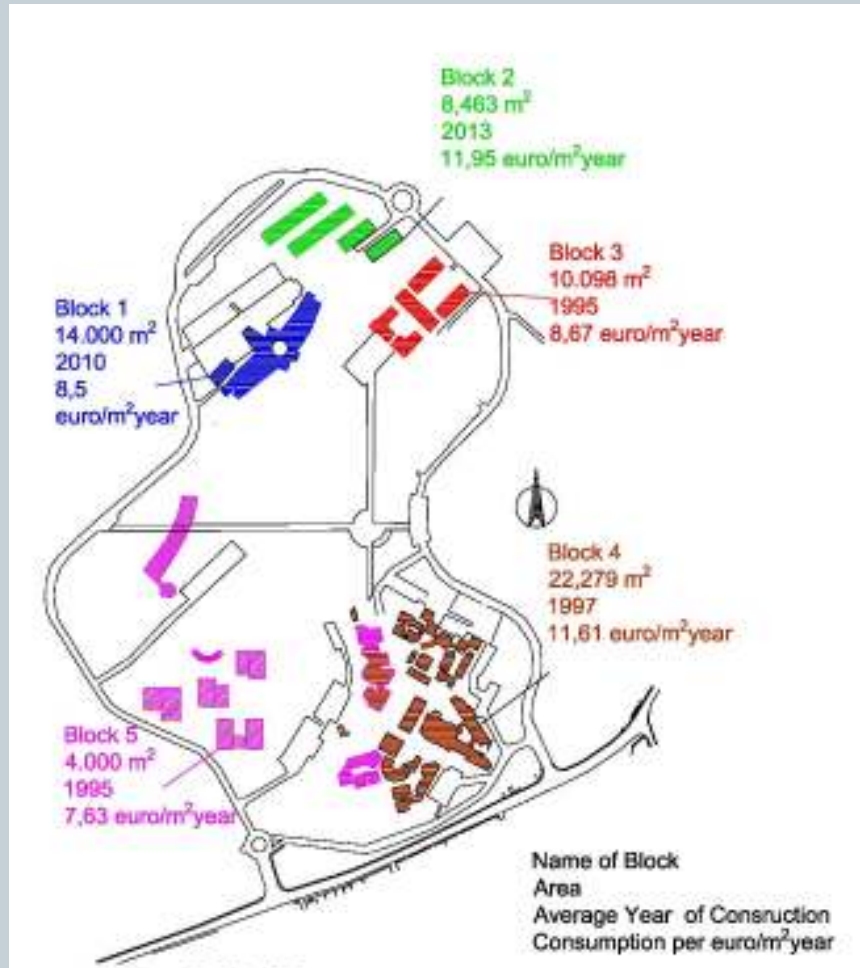
Some encouraging results were shown



Apr. 15% cost reduction ... but we reach
6000 students from about 3000 (2012)
Expect PV Installation

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Results related to energy savings



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Next (1/3)



Lack of Government funding for large scale actions:

- **A1.Actions on Electrical and Mechanical Equipment and Automation (BMS):**

- ✓ Replacement old Heat Pumps
- ✓ Replacement old type split type A/C units with more energy efficient
- ✓ Unified all heating/cooling systems under BMS

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Next(2/3)



- **A2. Buildings before 2000:**

- ✓ Shell structure Upgrades
- ✓ Frames and Structure Panels
- ✓ Shades

- **A3. Go to LED:**

- ✓ Replacement old type light fixtures with LED panel
- ✓ Replacement old type light bulbs with LED
- ✓ Sensors.

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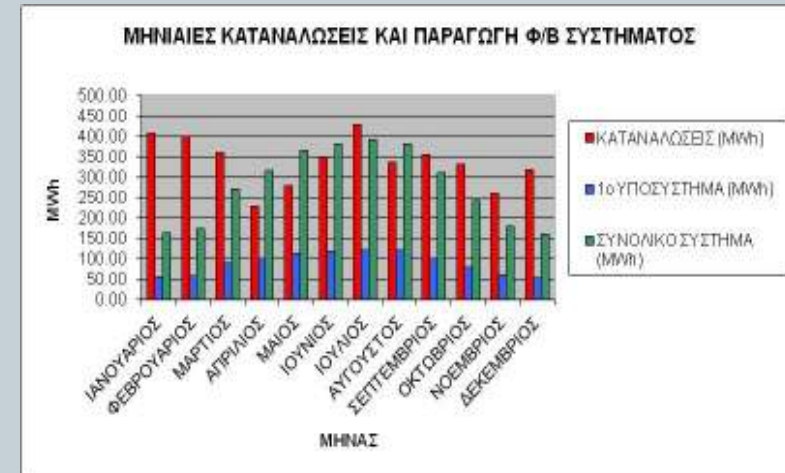
Next (3/3)



- **B1. Production Energy**
 - ✓ Sustainable expansion of TUC
 - ✓ Study with TUC budget for 2MWp
 - ✓ Already to Government Administration

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2015 +



ΕΓΚΑΤΑΣΤΑΣΕΙΣ ΦΩΤΟΒΟΛΤΑΪΚΩΝ



ΦΟΙΤΗΤΙΚΗ ΕΣΤΙΑ

Green University Strategy Next/ DESIGN PV

