

The Non Energy Benefits of Energy Efficiency for Higher Education Institutes in combination with Global Reporting Initiative accelerate Sustainable Development.



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1) Introduction

Higher education institutions (HEI), seen as a key player in the promotion of sustainable development (SD) are making advancements in SD implementation

in terms

of campus greening,
curriculum renewal and
research orientations



1) Introduction

In many cases there is a barrier and the global rate of success can be rather low. In this study we want to present the progress of implementation of SD in two different HEI.

The Energy Efficiency aspects for buildings can be an additional driver for the Flemish institute.

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2) Methods

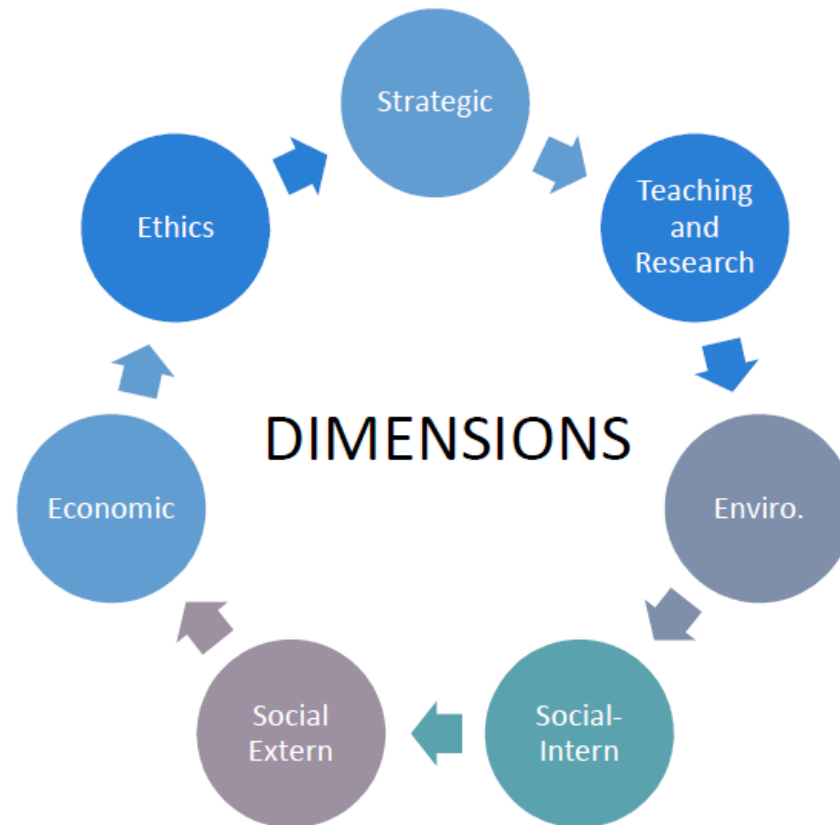
Instituto Superior Técnico has been implementing several measures in terms of a sustainable campus. All these activities concerning sustainability have been assessed through different indicators. This institution transposed the application of the GRI indicators to the context of HEI.



2) Methods

1. Assess the Corporate Social Responsibility within Instituto Superior Técnico (IST).

2. Apply the Global Reporting Initiative (GRI) guidelines and rules.



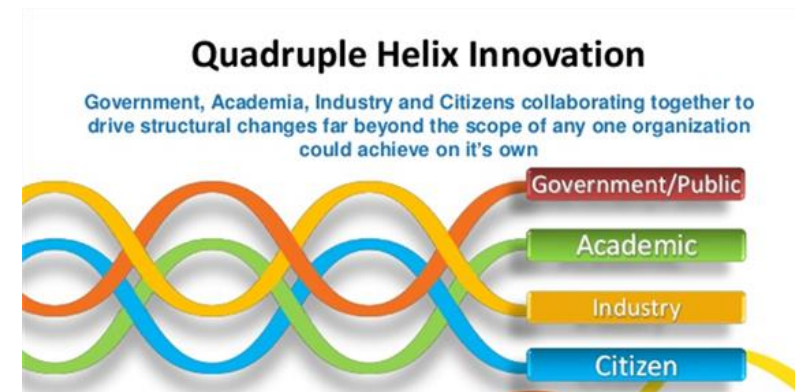
2) Methods



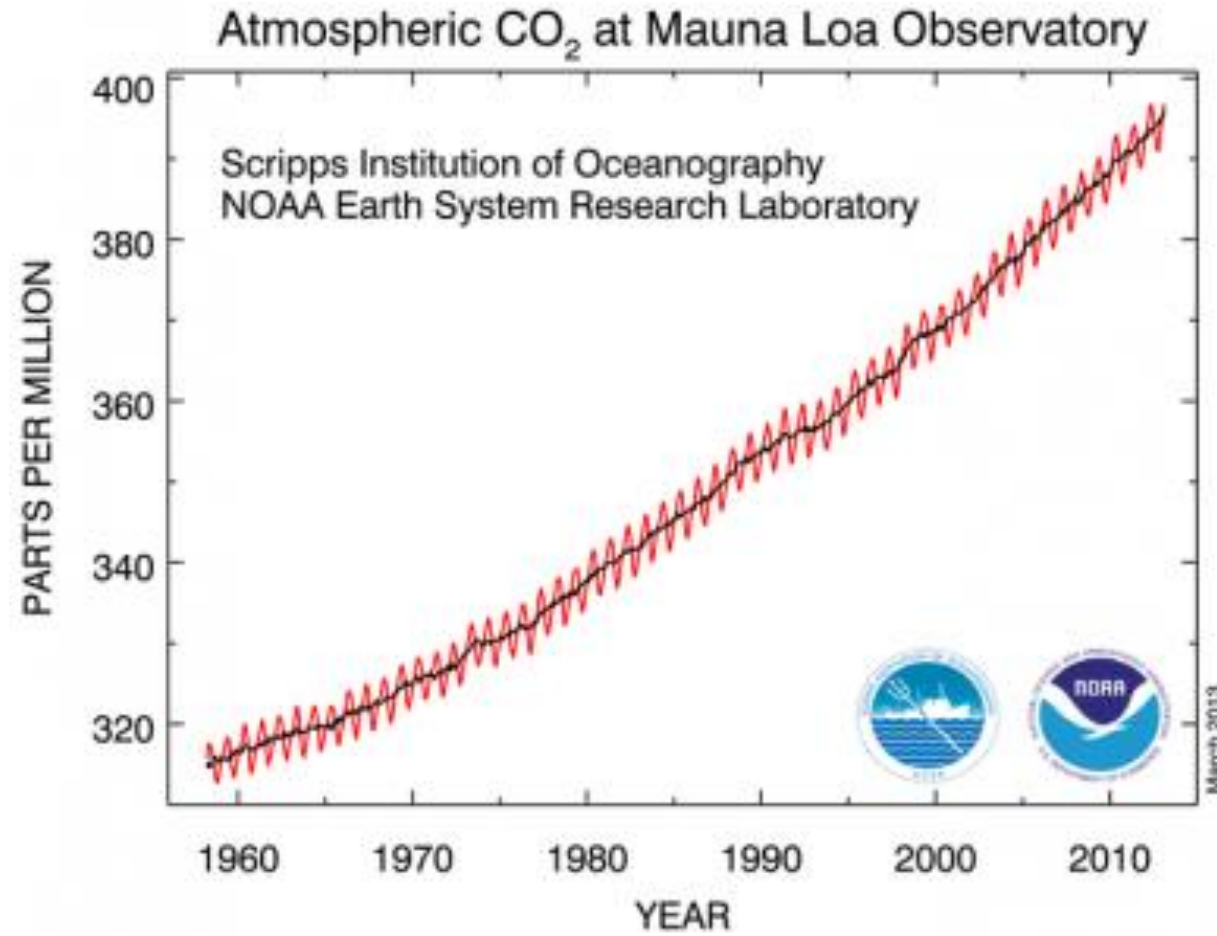
The G4 sustainability reporting guidelines were used in this sustainability report. The CORE option is used to report: this includes the essential elements of a sustainability report and provides background on what the organization communicates about its economic, environmental and social performance and its impact.

The members of the steering group are all internal (central services and / or departmental employees).

The policy advisor is a link with the postgraduate group of the EEA. For this training the steering group is assembled according to the quadrupole helix model.

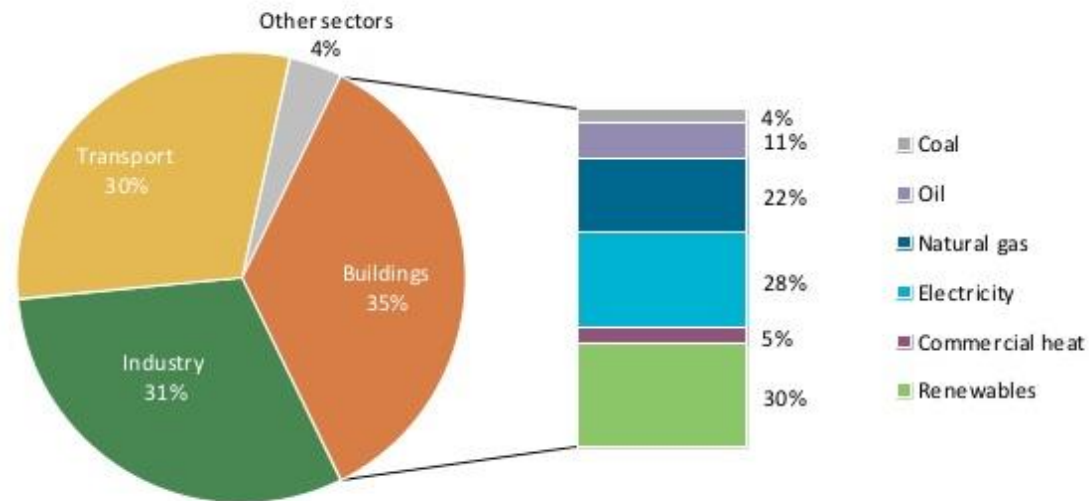


Intermezzo CO₂-evolution



Intermezzo energy consumption buildings

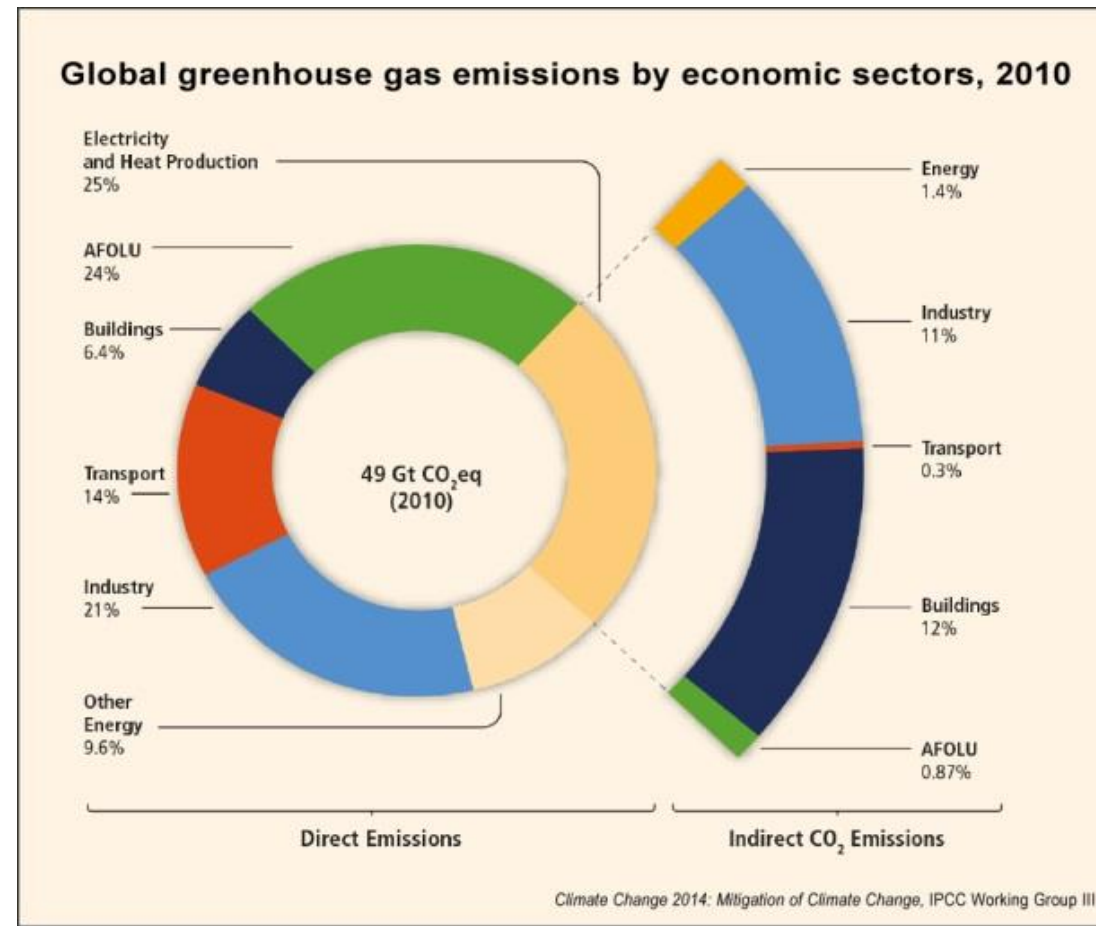
Final Energy Consumption by Sector and Buildings Energy Mix, 2010



Buildings largest end-use sector!!

© OECD/IEA 2014

Intermezzo GGH by economic sectors 2010



Intermezzo Climate and Energy goals in EU

European commission has decided within the 2030 Framework for Climate and Energy to increase the goals in comparison to 2020 targets namely:

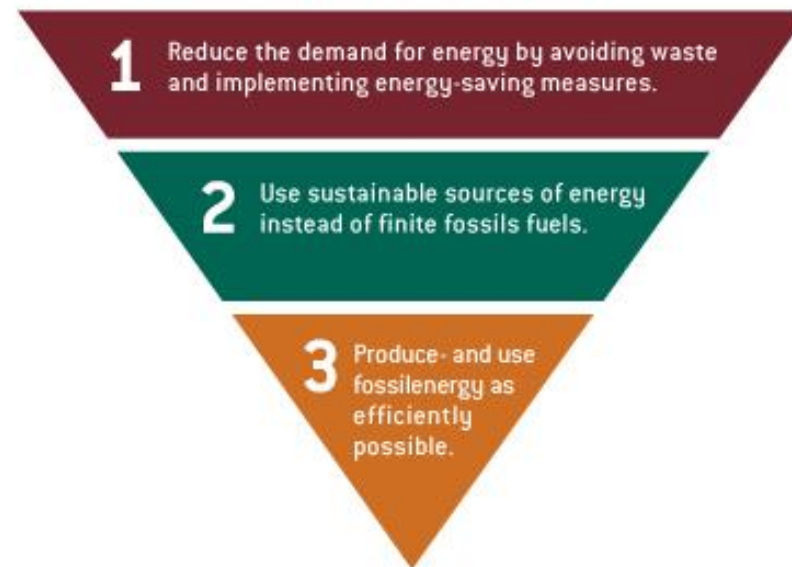
- 40 % GHG emissions (20%),
- 27 % renewable energy (20 %),
- 27 % Energy Efficiency (20) and
- 15 % interconnection (10%).



2) Methods

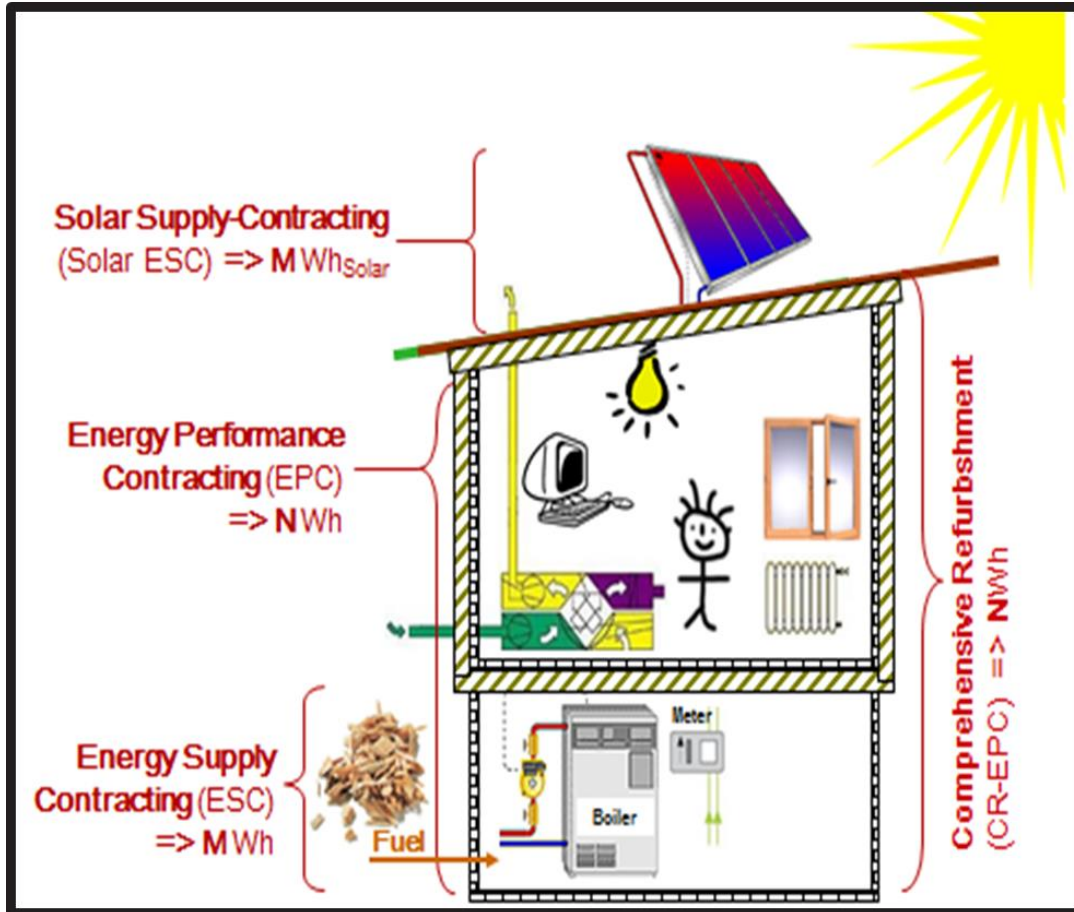
Traditional Trias Energetica

The Trias Energetica concept:
the most sustainable energy is saved energy.



2) Methods

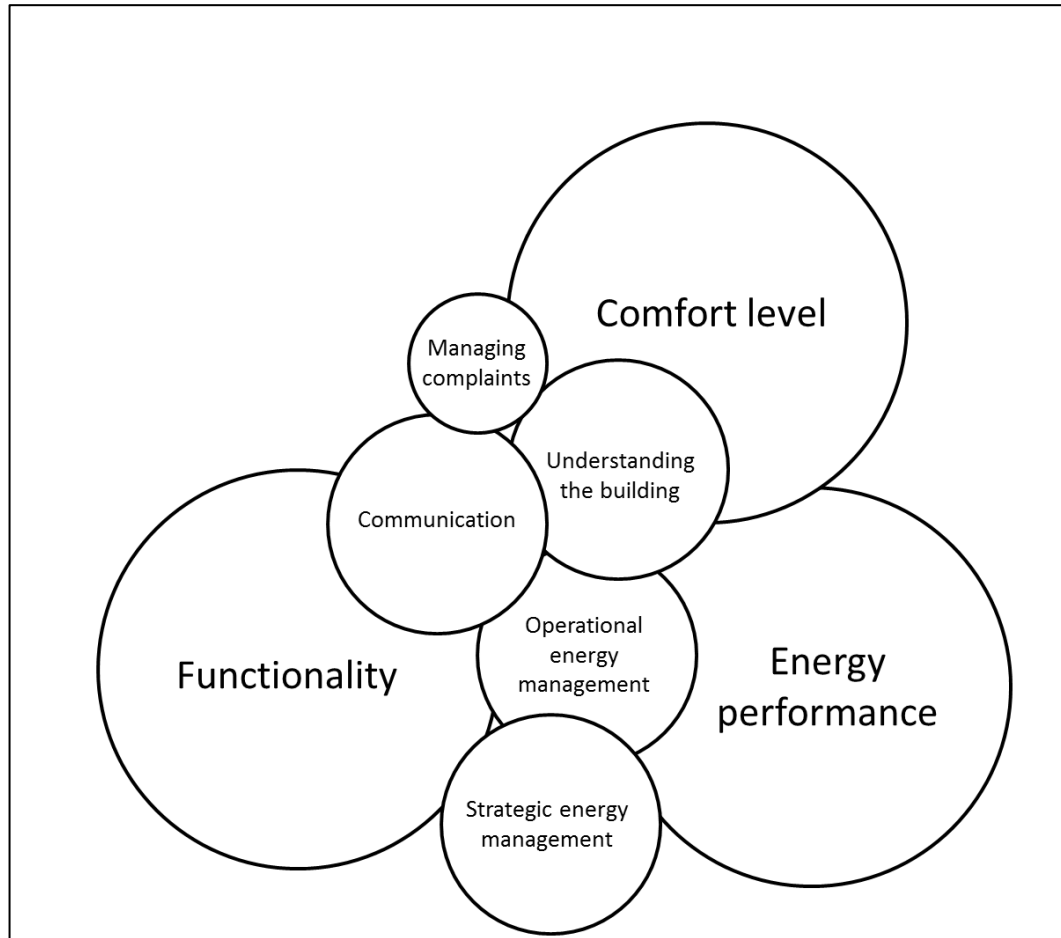
New Cleantechnologies dealing with Energy Efficiency



The University College PXL started only two years ago together with several in- and extern stakeholders a new postgraduate Energy Efficiency Services (EES). As a result of this curriculum renewal the PXL performs at this moment Energy Quick Scans for all their buildings. In view of this result they will eventually decide to opt for an Energy Performance Contracting (EPC)



2) Methods



The social component is very important in the interdisciplinary of EES. It forces, or stimulates, the industrial actors to cross the installation limits and consider their role in the social context.

3) Results

General

- ☐ The dimensions of the SR more developed by higher education in Portugal are the social dimension (internal and external)
- ☐ The environmental dimension is the most underdeveloped

Strategic Dimension

- ☐ Most developed: Promoting the preservation and promotion of cultural heritage and memory of the institution; inclusion of SR in the mission, vision and values
- ☐ Less developed: Existence of sustainability report; monitoring mechanisms

Economic Dimension

- ☐ Most developed: Financial support for students in need
- ☐ Less developed: Specific Budget for SR



3) Results

Ethics Dimension

- ☐ Most developed: Some institutions already have codes of ethics
- ☐ Less developed: Monitoring this code

Social External Dimension

- ☐ Most developed: cultural nature of events Existence / sports open to the public; Community support actions
- ☐ Less developed: SR criteria application for supplier selection.

Social Internal Dimension

- ☐ Most developed: mechanisms for suggestions / complaints / compliments; actions of integration for new students
- ☐ Less developed: actions to support retirement; Actions to improve teachers and non-teaching staff skills



3) Results

Environmental Dimension

- ❑ Most developed: sustainable policies for resources consumption; education activities / environmental awareness
- ❑ Less developed: environmental management system; campaigns against food waste, monitoring ECOLOGICAL FOOTPRINT

Teaching and Research Dimension

- ❑ Most developed: Existence of course units subordinated to the SR; Seminars (...) on RS
- ❑ Less developed: Difficulty of systematization of information



3) Results



Duurzaamheidsrapport PXL-Tech

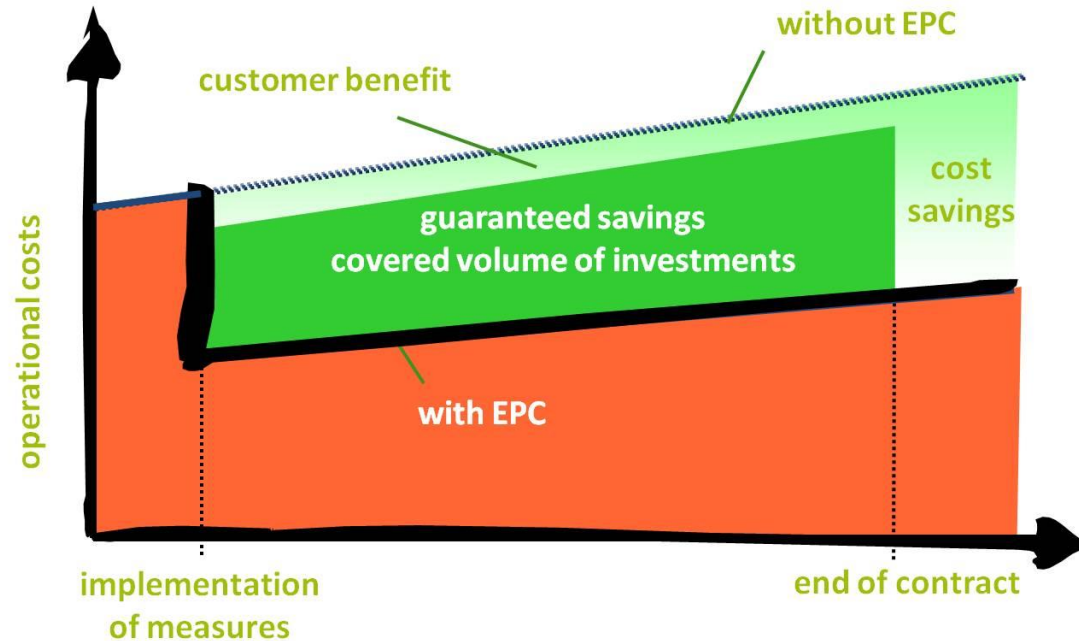


Within the reporting, several general standard aspects are reported (G1 - G56) and within the specific aspects, a steady choice was made within the steering committee for reporting the following aspects.

Within the social aspects, there are reports on employment (G4 -LA1), safety committees (G4-LA5); Occupational accidents (G4-LA6), staff formation (G4-LA9) and diversity and equal opportunities (G4-LA12). Within the environmental aspects, there are reports of 6 indicators, namely material consumption (G4-EN1), energy consumption (G4-EN3), water consumption (G4-EN8), biodiversity (G4-EN11), greenhouse gas emissions (G4-EN15) and Locks on waste (G4-EN23).



3) Results



The treated scenarios confirm the conclusions of the interim presentation of the Energy Quicksan results, that the PXL buildings have a solid potential for an EPC project, based on the current ESCO market in Belgium.

4) Conslusions for IST

ECONOMIC ASSESSMENT

Since IST is a public organization, its objective lies in being a provider of excellence of access to higher education to the population instead of its focus on profit. Therefore, in the economic scope GRI G4.0 indicators require some adaptation in order to apply them to IST.

SOCIAL ASSESSMENT

Almost all the G4.0 social indicators may apply, having some of them a major importance due to the IST's social purpose.

Those indicators concerning the human resources management and the impact in long term on society have a relevant role in this assessment.

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4) Conclusions for PXL

As a result of this curriculum renewal the PXL performs Energy Quick Scans for all their buildings. For both project a steering committee with several in- and extern stakeholders was installed. The awareness for sustainability-Energy Efficiency has increased both in the management and within the departments. Sustainability is included as a KPI in the following policy plan.



4) Conclusions for PXL

The PXL is looking to apply the Energy Efficiency approach for all his buildings as well as for his new locations.

- The potential of the energy savings in the main technical domain HVAC (heating, ventilation, cooling), Lighting, Isolation of the outhter shell (roof, wall, window and door)



4) Conclusions for PXL

- The determination of the perimeter of the investment.
Different scenarios can be considered
- Determination of the duration of the EPC contract (including maintenance as well), in view of the financial scheme versus the total investment
- The development of a financial plan and the evaluation of the financial profitability of the EPC project



4) Conclusions (general)

The collaboration between early adapters and the steering committee is important and helps ***to develop the “ESCo” market.***

⇒ ***Several project are initiated in private and public market***



4) Conclusions (general)

Enterprise Flanders and Flanders Investment & Trade (F.I.T) have launched last year a project call “ESKIMO” to stimulate the ESCo market for SME in Flanders.

In addition the Flemish minister for energy Mr Bart Tommelein instructs to investigate the installation for an ESCo-fund.



4) Conclusions (general)

At this moment it seems that EE (in collaboration with in- and external stakeholders) in combination with GRI reporting (mainly with internal stakeholders) gives additional opportunities and accelerate the introduction of SD in HEI.

To Do

In a next step we will further investigate

- the interchangeability of the good practices of both set-ups,
- the role of different stakeholders and
- the role of EES as a catalyst for SD implementation

4) Conclusions (general)

ESCO Speeddating in 2016



4) Conclusions (general)

ESCO Speeddating in 2017



4) Conclusions (general)



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