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step by step renovation towards nearly zero energy SPORT buildings

STEP-2-SPORT – THE POINT OF VIEW OF THE EU ESCO SECTOR

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ENERGINVEST SERVICES PORTFOLIO

(Minimize risks and costs, optimize asset value and profits)

SMART Building Performance Management	Consulting services that delivers our customers with a cost-optimal and performance based energy, maintenance, comfort, building value and certification management system.	Fedesco Building Agency STIB-MIVB PXL High school
SMART Energy Performance Contracting	Facilitation tools and services that helps our customers to make the most of the ESCO/EPC market, through EPC contracts, from initial feasibility assessment to contract implementation and follow-up, including finance structuring.	Fedimmo Province Brabant Walloon Gemeente Beersel 5 SMEs (ESCO4OV)
SMART Innovative Financing Programs	Consulting services that helps our customers to set-up Program Delvery Units (PDU) and innovative financing solutions and programs.	Fedesco CITYnvest Pilot projects Infrax ESCO Services Igretec ESCO Services Leuven 2030

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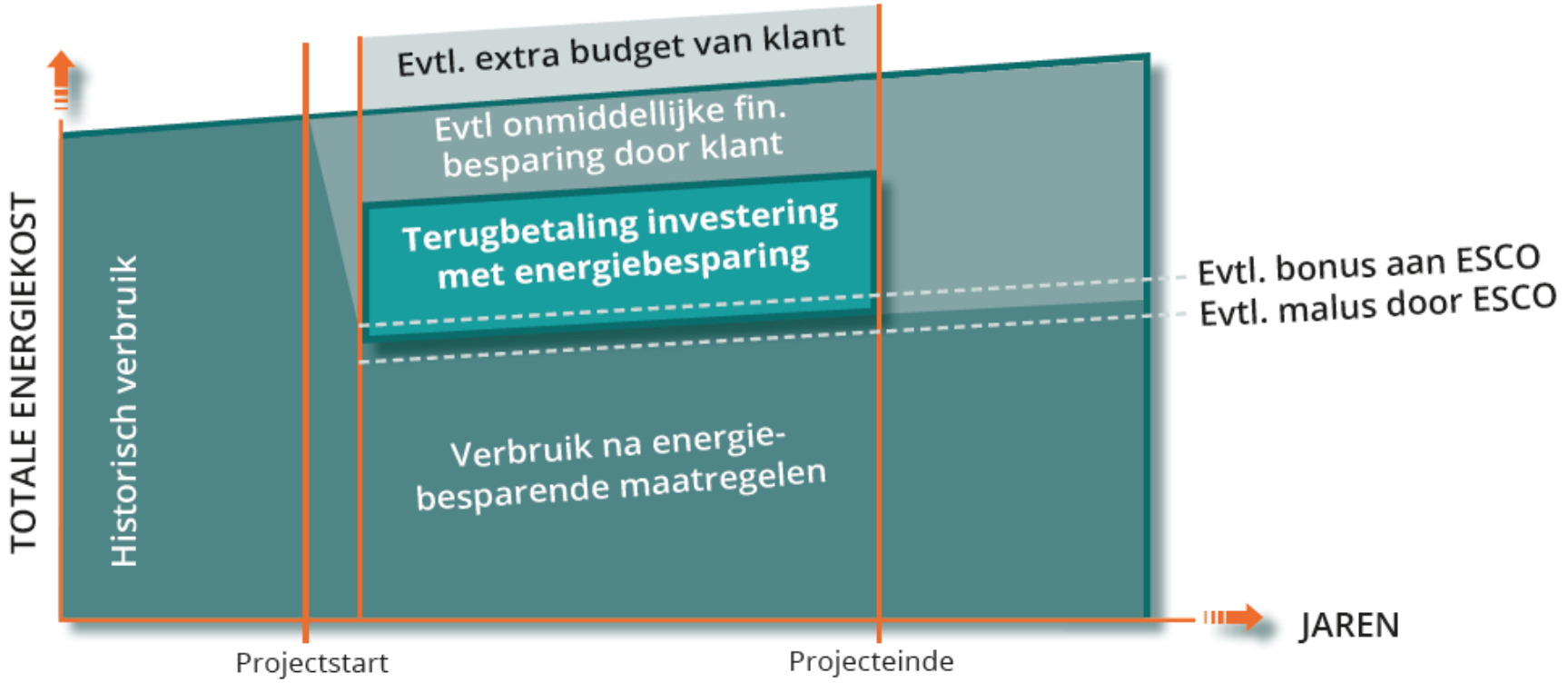
What is Energy Performance Contracting?



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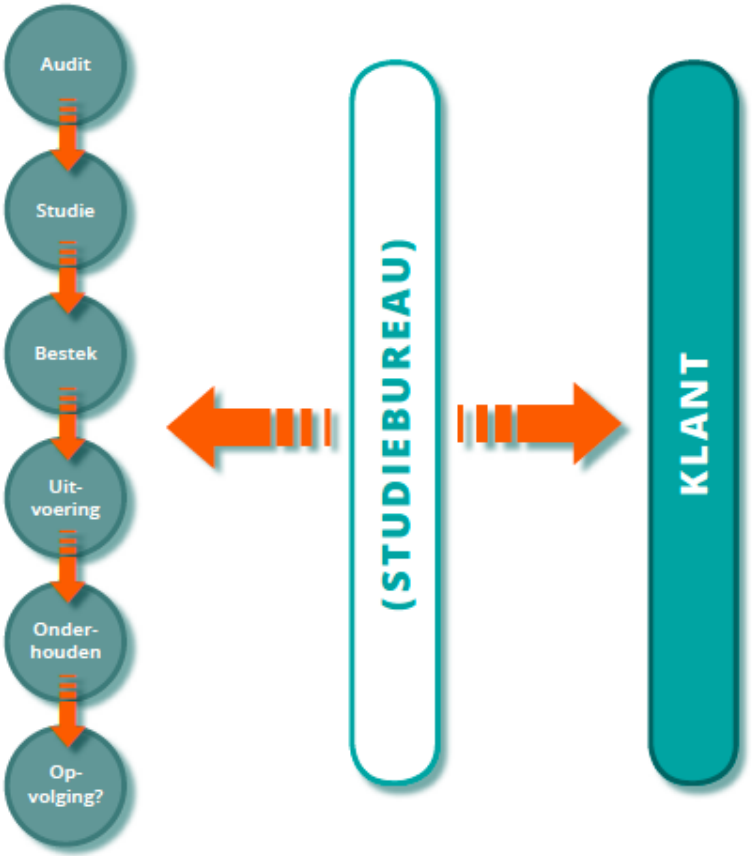
Classical approach



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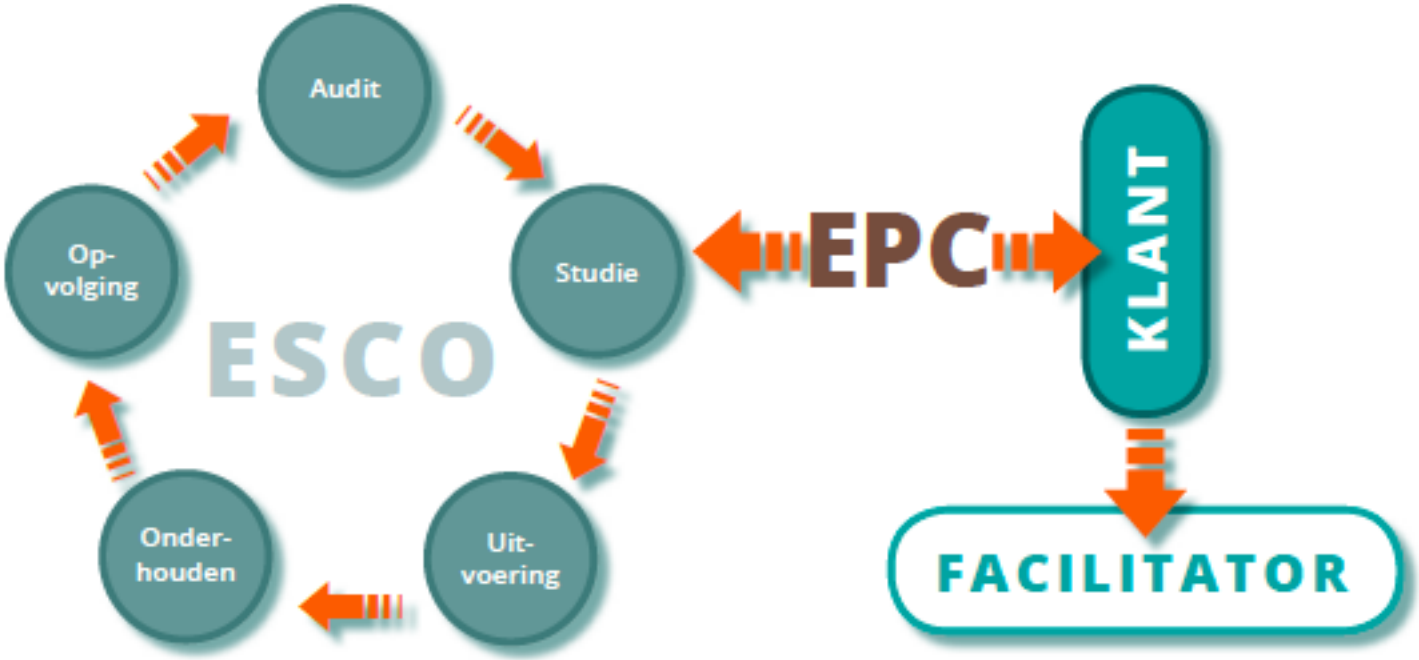
ESCO approach



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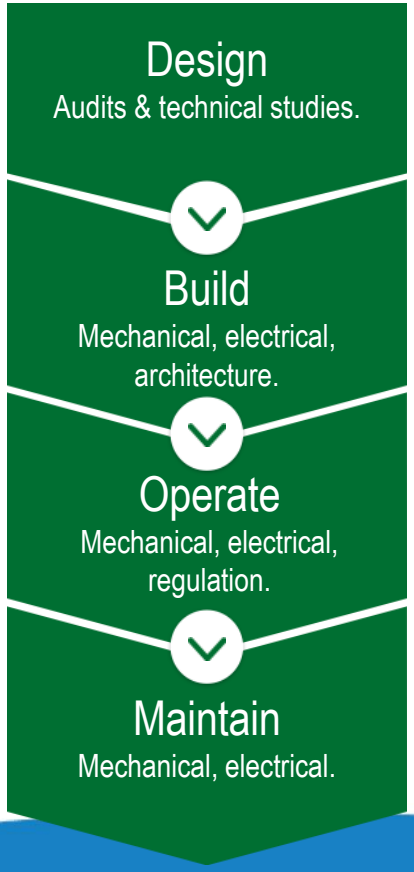
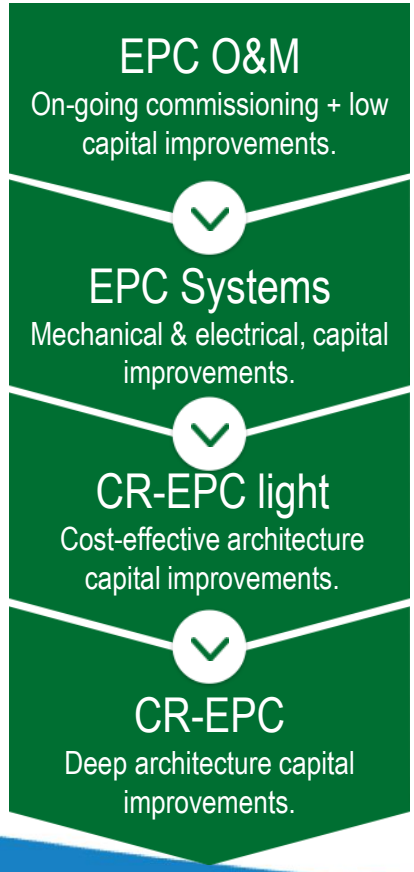
UNDERSTANDING ENERGY SERVICES

(Energy efficiency services, which may include retrofit works, aiming to realize sustainable energy performance of a building, an industrial process, infrastructure,…)





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Characteristics of Energy Performance Contracting

- Single Contractor = ESCO
- Functional and performance based tender documents
- Energy (and Maintenance) Baseline
- Guaranteed Savings
- Measurement and Verification of savings (e.g. IPMVP)
- Option: ESCO financing or Third Party Financing
- Well suited for Pooling of buildings in single project

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Characteristics of Sports Facilities

- Swimming Pools
  - Large Heating demand
  - Well suited for CHP
  - Water and Indoor Air Quality
  - Building Envelope
- Sports centers
  - Large potential for Lighting projects
  - Ventilation
  - Sanitary Hot Water
  - Building Envelope

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EPC in Sports facilities: 3 options

- Single sports facilities
- Part of other building(s), e.g. School, including sports facility
- As part of larger pool, e.g. municipal buildings

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Case study 1: Centre d'Alt Rendiment de Sant Cugat

- Facility
  - Sports high performance center with several swimming pools and facilities for various sports such as athletics, soccer, basketball, gymnastics, boxing and much more
- Goals of building owner
  - To reduce the buildings energy consumption
  - To improve the efficiency of facilities and its operation and management

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Measures

- Improvement of interior lighting technology, based on LED
- Retrofit of heat production systems: replacement of oil boilers by gas boilers
- Cooling tower replacement
- New dehumidifier
- Replacement of the outdoor swimming pool's gas boiler by a solar thermal facility
- New monitoring and management system (with 45 field sensors) under responsibility of an energy manager who is CMVP qualified
- Insulation improvements in pipings and swimming pools
- Actions for water saving

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Facts and Results

- Installation of energy efficiency measures 2014
- Duration of the contract 10 years
- Investment 1,3 mil. €
- Energy costs (Baseline) 700,000 €
- Guaranteed savings in Euro 287,000 €/a
- Guaranteed savings in % 39%
- Reduction of CO2 emissions 1,037 t/a

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Case study 2: ASVÖ Gymnasium Graz – Austria

- Facility
  - ASVÖ (Allgemeiner Sportverband Österreich Landesverband Steiermark)
  - One building with about 2,500 m² net floor area (1,180 m² indoor sport area)
- The ventilation system of the ASVÖ became obsolete. Due to a technical ideas competition within the contracting tender, an ideal solution for the lifespan of the building services was found.
- Goals of building owner
  - Optimized heating and ventilation system
  - Guaranteed investment costs
  - Guaranteed energy savings
  - Service and maintenance

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Measures

- installation of centralized ventilation system
- installation of ceiling-spotlight-heating
- conversion from oil to natural gas heating
- installation of building-process control technique
- renewal of components of the existing heating-distribution
- additional insulation of ceilings
- insulation of heating-pipes
- renewal of window seals
- installation of energy-meters
- replacement of circulation–pumps of warm water facility

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Facts and Results

- Installation of energy efficiency measures 2015
- Duration of the contract 12 years
- Investment 455,000 €
- Energy costs 2014 (Baseline) 40,681 €/a
- Guaranteed savings in Euro 19,000 €/a
- Guaranteed savings in % 47 %
- Reduction of CO2 emissions 30 t/a

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Conclusions

- Sports facilities present an interesting opportunity for Energy Performance Contracts
- Market Practices focus on EPC models for Regulation/Commissioning and Techniques (HVAC, Lighting, CHP) with 10 to 15 year contracts
- There is an increasing opportunity for Deep Retrofits (NZEB) with longer Pay Back Times, involving General Contractors alongside ESCOs. More pilot projects are required.

Resource: « BEA: Contracting fur Kommunale Sportstatten – Strategien zu Klimaschutz und Kostensenkung Leitfaden » (2002)

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