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Energy Performance Contracting in der Industrie – wie funktioniert es?

Auftaktveranstaltung zur Informationsreise Algerien ¦ Karlsruhe, 09 April 2019

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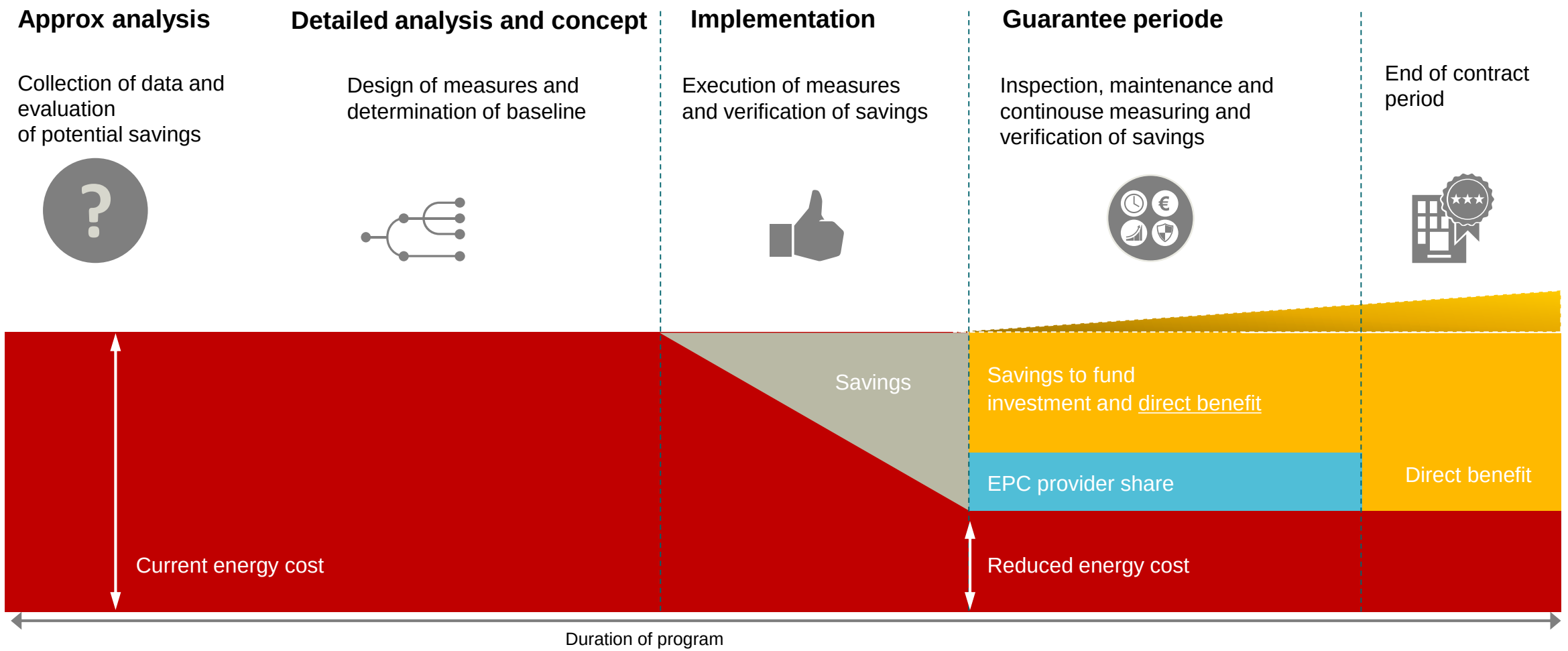
eu.bac is the European Building Automation and Controls Association. It represents the major European manufacturers of products and systems for home and building automation. eu.bac has founded the European Association of Energy Services Companies (eu.esco) for promoting Energy Performance Contracting as the economically sustainable solution for improving the energy performance in existing buildings.

EPC project process / business model (in principal)



Process for EPC project – focus industry

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1 Production Process analysis	2 Selection of plant	3 Energy Health check	4 Energy Analysis	5 Implementation
• In-depth understanding of manufacturing requirements and auxiliary processes	• Identification of optimization potential and measures	• Assessment of all energy relevant processes • Executive interview	• Implementation proposal • Development of measures	• Transformation of potential savings into cost reduction
• Build up knowledge about the use of inbound energy sources: Electricity, Gas, Process heat, Steam, Com-pressed air, etc. • Analysis of energy balance • Review environmental data	• Focus on the sites with most impact on profitability • Consider national regulations and government subsidies	• Opportunities to increase Energy Efficiency • Detect saving potential • Benchmarking (internal / external) • Recommended action plan • Estimation of monetary savings	• Detailed technical and economical feasibility study • Overview of energy savings p.a. • Holistic implementation concept - Technology - People - Production - Infrastructure	• Reduce energy bill and production costs • Guaranteed and sustainable results • Continuous benchmarking • Ongoing measurement and verification • Ongoing optimization • Training and awareness
		Exit option	Exit option	

The path forward ➔

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Clear Goals	Define clear financial, performance, savings or other goals and **any other metrics of success and benefit**	
Whole-Facility Approach	Consider / approach all potential opportunities (Projection of energy demand & corporate requirements, development of energy markets, regulatory developments & future trends, technology options & innovations	
Transparent Baseline	Baseline developed in collaboration with building staff, understood and agreed upon by **all parties involved**	
Lifecycle Cost Analysis	Consider energy, operational, and maintenance savings as well as revenue streams from incentives and compliance risks	

Benefit: Gain optimal balance of innovation and cost-effectiveness and be prepared for the future

The path forward

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Sound Investment Proposal	Cost overview and guaranteed savings allows to make investment decisions with confidence. Involve a consultant for verifications.
Guaranteed Performance	Provide certainty that the installation will perform over periods ➔up to 15 years
In-dept commissioning	Realize the full efficiency gain from new and existing systems
Monitoring, measurement, verification	Ongoing monitoring-based commissioning should also be considered




Benefit: Project will be executed and perform as designed; operations, maintenance, repair and replacement are secured

Identification of optimization potential and measures - real example

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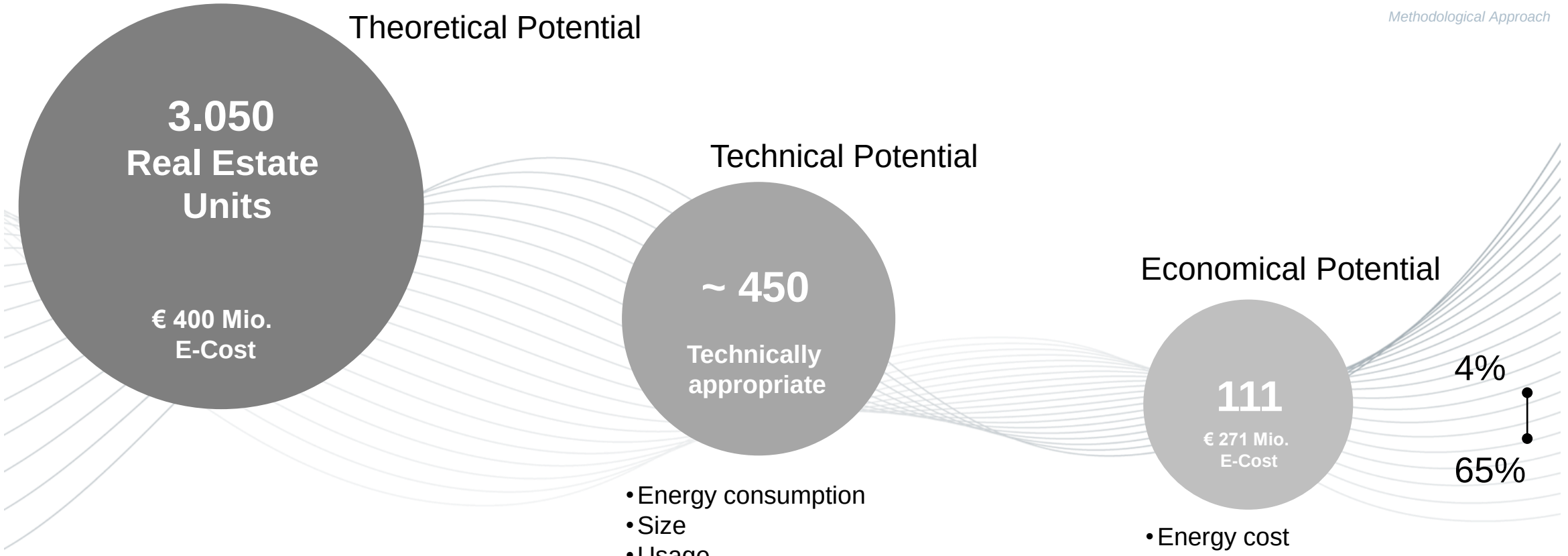
Methodological Approach



The “Buying-Center” on customer side

- Sustainable operation of buildings
- Resident satisfaction
- Costs / value of buildings
- Lifecycle costs guarantee

- Reduction of costs
- Meeting service levels
- Standardization of services

- Approval of financial solution
- Compliance to company guidelines
- Mandate of final go-ahead

- Carbon footprint
- Sustainability targets
- Optimization of media purchasing

- Reliable production
- Short ROI (< 4 Jahre)
- Reduction of costs per unit
- Performance assurance

- High rate of return
- Low capital consumption
- Low risk Investment

- High availability of components
- Process improvement
- Quality of production

- Site certification
- Reporting environmental performance

Various stakeholders have different interests

Energy savings partnership between Siemens and the Aller-Weser-Klinik in Achim, Germany

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Aller Weser Klinik

Year of construction 1974

Floor space 29.000 m^2

145 beds / full medical care

Investment 1.9 Million EUR

Challenges

- Cost-neutral modernization of technical building equipment
- Overall energy cost reduction
- Rise energy efficiency
- Increase sustainability

Solution/portfolio

- Complete replacement of the air condition systems
- Combined heat power plant (CHP) to cover base load
- “Green Building Monitor” informs patients and staff about the building efficiency level of the building and is motivation to changes in energy behavior
- Funding of the measure through energy savings

Benefits/value to customer

- Energy saving partnership (EPC) / Contractual period of 10 years
- Energy cost savings of EUR 270’000 yearly (-55%)
- - 75% power purchasing from the grid
- 50% CO2 reduction

“We have made the right decision to implement the renovation of the hospital technology with an external partner”

Marianne Baehr, CEO
Aller-Weser-Klinik gGmbH

Germany

Südzucker Zeitz plant, Germany - Significant savings through optimizing the plant's energy

Südzucker AG

Europe’s leading supplier of sugar products

270.000 t sugar p.a.

Challenges

- Maximizing energy efficiency in its 29 sugar factories and two refineries (Example plant Zeitz)
- Run more sustainably and make a contribution toward protecting climate

Solution/portfolio

- SIMOTICS FD motor and speed control to adjusts the speed of the fans to adapt the volume of air required
- Financing through Siemens Financial Services through Energy Performance Contracting (no input of equity or third-party capital)
- According to the plan, the efficient technology should be self-financing.

Benefits/value to customer

- 38% in energy savings = 900 MWh p.a.
  = (275 private households for a whole year)
- Self-financing of efficiency technology
- Customer pays monthly fee corresponding to the energy cost savings

200 Employees

800 Farmers

deliver 12.000 t sugar beets daily

Germany

Energy Performance Contracting - the «beauty» of the business model

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Project Management

The entire project ist delivered by a single supplier

Risk Management

The ESCO assumes the related financial and technical risks

Financing

All saving measures are financed from the resulting savings

Customer Relation

Supplier and customer share the same motivation

Guaranteed Savings

The ESCO contracutally guarantees the savings

The overall benefits for the building owner

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- **Upgrade buildings with no impact on current operational budgets**
- **Reduce building / plant energy consumption by typically over 25%**
- **Minimize the risks (price increases or security of supply), meet your greenhouse gas emissions targets**
- **Include renewable energy and storage capacity and become a “prosumer”**
- **Improve the value of your buildings / plants**
- **Gain a competitive advantage (financial and image wise) and ensure regulatory compliance**

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Thank you for your attention

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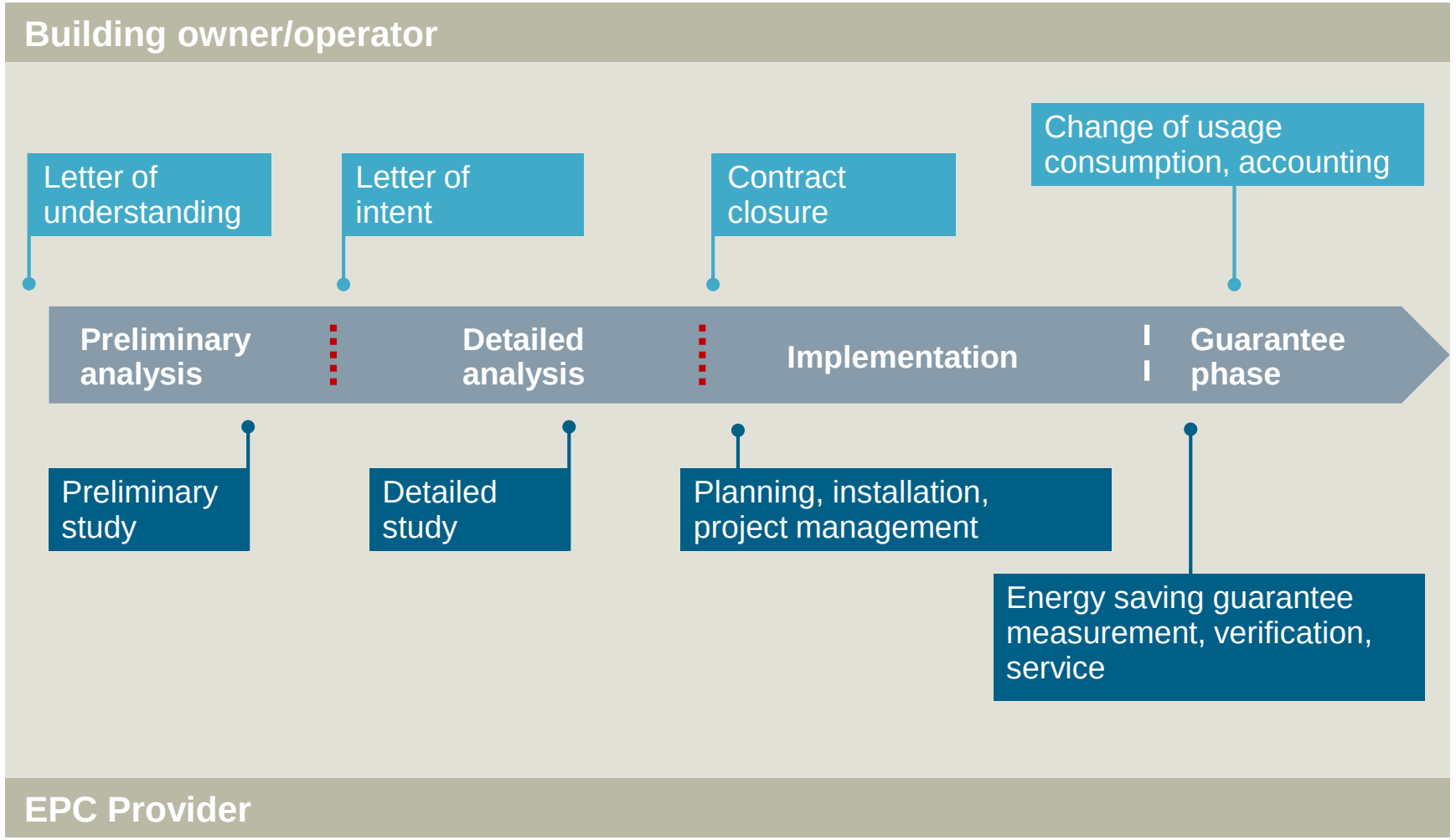

EPC market barriers direct or indirect addressable

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Information & awareness	Institutional & legislative	Financial	Market & external	Technical & administrative	Behavioral
• Absences of success stories	• Problematic government procurement rules	• Difficulties accessing financing	• Low energy prices	• Complex administrative procedures	• Client risk aversion about EPC models or future uncertainty
• Low client awareness on ESCO concept	• Legislations creating unfavorable conditions towards EE / EPC	• Scare or expensive capital / stale banking sector	• High perceived risk compared to other investment options	• High transaction costs	• Limited confidence in ESCO services
• Lack of awareness on how to access financing	• Lack of accrediting mechanisms to certify ESCOs	• Conventional financing rules are incompatible with EPCs	• Small scale projects	• Future savings predictability issues	• Preference for in-house solutions
• Undervalued benefits of energy efficiency improvements		• Lack of experience in EE projects of financial Institutions	• Multi-party ownership and split incentives	• Lack of technical skills / experience in EPC projects	• Unwillingness to take on long-term debt

In coordination with the European Commission DG Energy / Joint Research Center

Energy performance contracting
Essen City Hall, Germany

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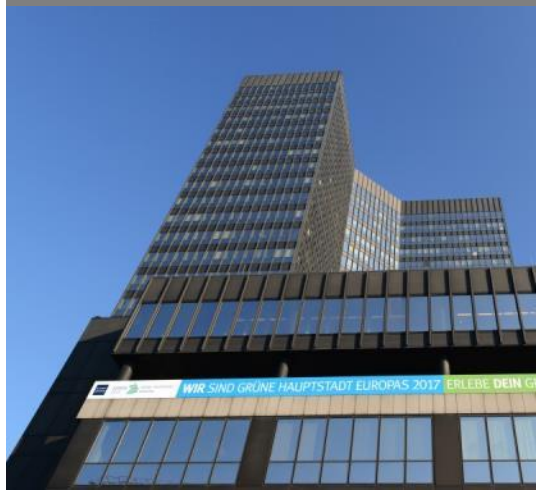
STADT ESSEN

Essen City Hall

- Putting in operation 1979
- 22 stories / 106 meter high
- 69.000 square meters office space



Challenges

- Drive down OPEX, increase energy efficiency
- Improve employee satisfaction
- Raise public perception and visitor satisfaction
- Improve overall building performance

Solution/portfolio

- Replacement of central ventilation system
- Renewal of room air conditioners
- Replacement of control systems
- New energy efficient lighting systems

Benefits/value to customer

- Immediate and guaranteed cost reduction
- Improved visitor and employee experience
- Better sustainability performance
- High operational security

10.5 Mio €
Investment

1.2 Mio €
Guaranteed savings per year

2.700 t
CO2 abatement per year

Germany