



## **The Municipality as Initiator for Energy Efficient Renovation and Construction**

- Recently realised projects in Austrian Cities**
- Contracting as a way of financing and implementation**

Karin Dullnig, *ecoversum*  
Zaragoza, 28<sup>th</sup> of September 2015

# ecoversum – network for sustainable economy

## Our Mission:

Continuous raise of environmental performance and energy efficiency for a better quality of life, environmental protection and regional economic recovery.



## Get in touch:

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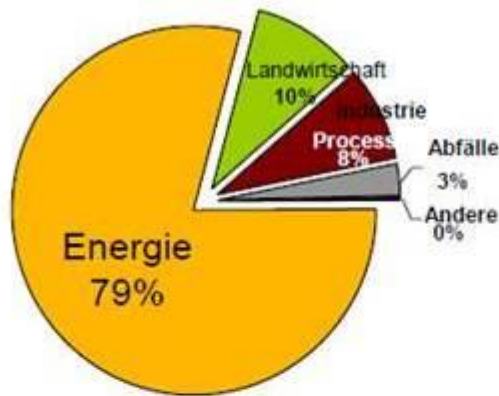
## Our Services:

- Consulting for companies, municipalities and the regional government
- Trainings and adult education
- Awareness-raising and market-processing



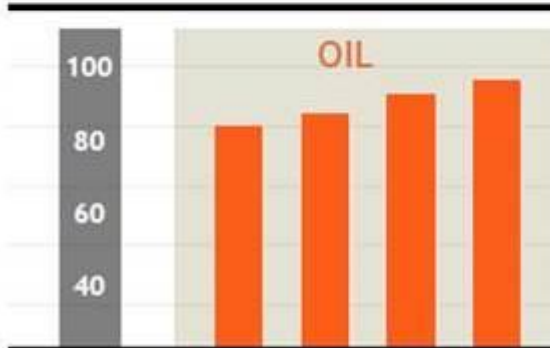
# Energy Efficiency as a NO-REGRET SOLUTION

CO<sub>2</sub> Emissionen 2008



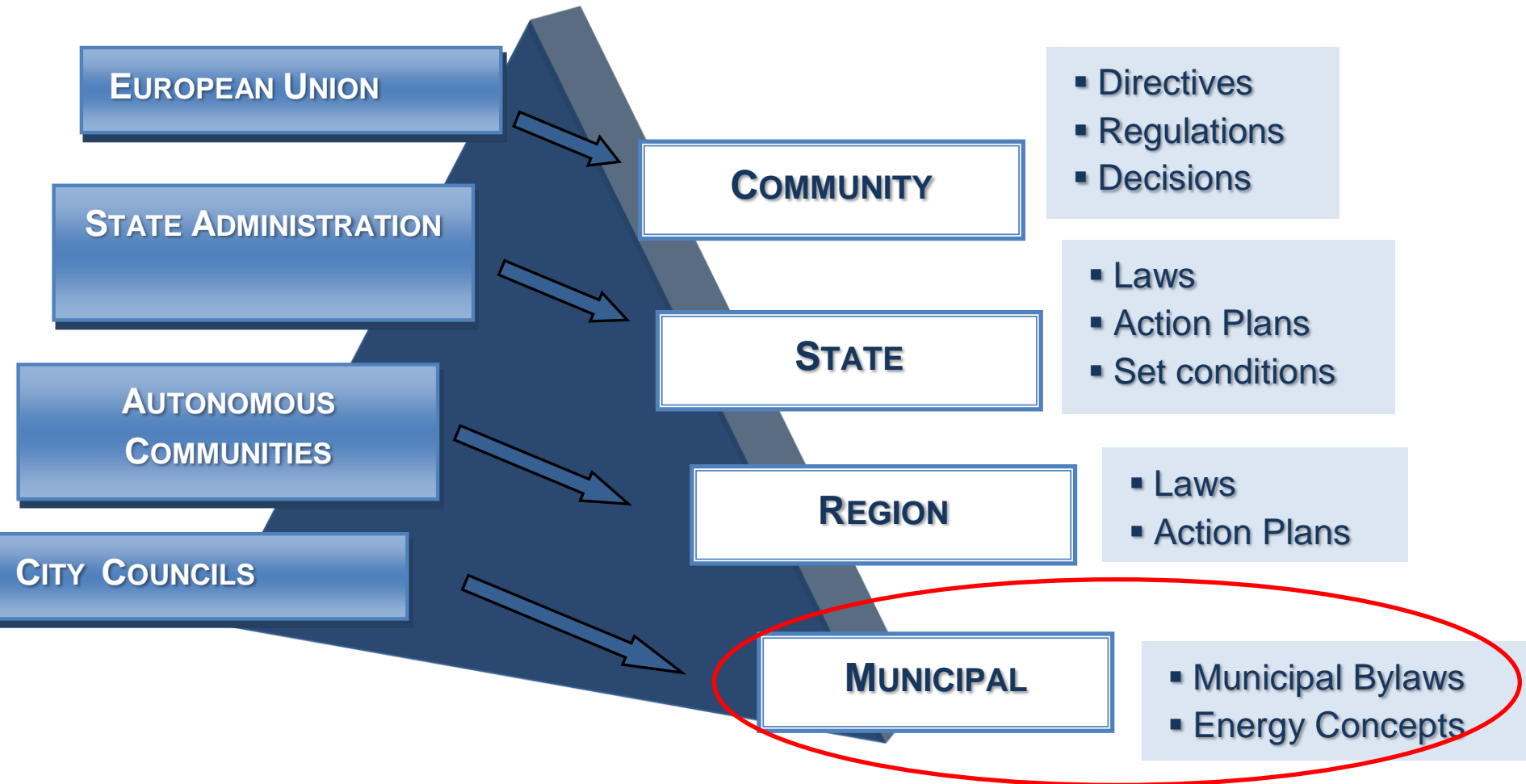
Prognose Öl-Importe

in %      2005    2008    2020    2030



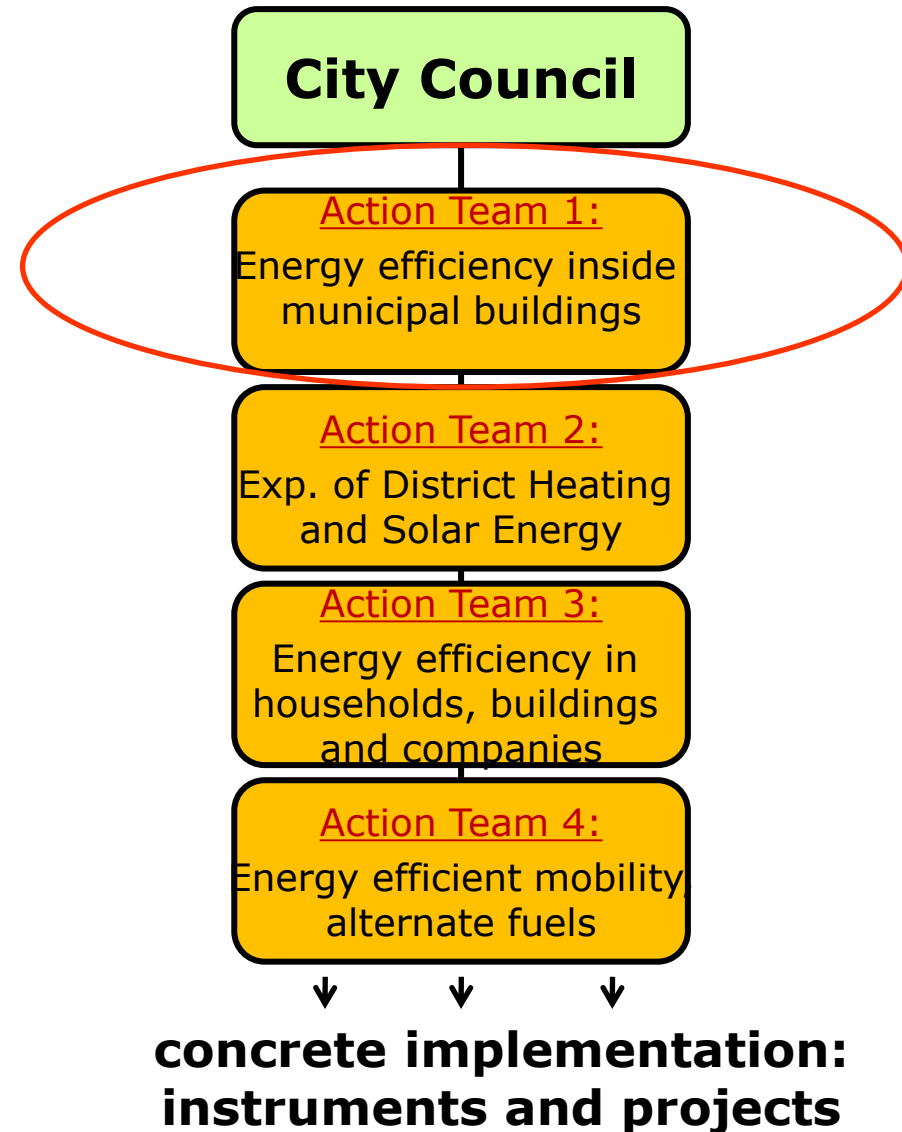
- To fulfill our climate protection agreements
- To reduce our import dependence of energy
- To survive in the economic competition with providing realistic energy prizes and surpley security

# Hierarchical Legistration and Leverage in Austria



source: EfficiencyJobs Manual, Modul 2

# City of Graz and its Strategic Energy Action Plan (SEAP)



# SEAP 1. Energy efficiency for buildings in municipal proverty (1)

Objective: MINUS 3%/a = minus 30 % until 2020

- ⊙ Compile a **Standard** for all municipal construction and renovation works („Grazer Gebäudestandard“)
- ⊙ Full cost or **Life Cycle Costs** as the base of financial decisions
- ⊙ Each department should get their **energy costs to their budget** -> incentive for energy saving
- ⊙ Energy saving competitions for the staff (**User Motivation Projects**) – e.g. Energy Trophy
- ⊙ **Energy controlling and management** for all buildings in municipal proverty

# SEAP 1. Energy efficiency for buildings in municipal proverty (2)

- ⊙ Realization of municipal construction and renovation works as innovative energy efficiency projects – **energy efficiency flagships**:
  - Park & Ride & Buisness Center Puntigam
  - public swimming pool- Bad Eggenberg
  - a new smart quarter - Reininghausgründe
- ⊙ Implementation of **Contracting models**
- ⊙ **Efficency programs** for municipal buildings (Lighting)
- ⊙ **Renovation programm for social residences** with the aim of nearly zero standard
- ⊙ **Change of the heating in social residences** (district heating or gas in combination with solar energy)

# ✓ Energy Monitoring System for Public Buildings



System for an active, real time and automated consumption control (electricity, heating, water)

- 🕒 Phase I: 53 buildings
  - Investment: 570.000 €
  - Savings: 105,000 € /a
- 🕒 Phase II: 280 buildings
  - Investment: 2 million €



# On going process: Energy Efficient Rehabilitation of public buildings



- ◎ 18 buildings:
  - 5 kindergarten
  - 4 schools
  - 4 homes for homeless people
  - 1 home for elderly people
  - 1 museum
  - 1 central kitchen
  - 2 office buildings
- ◎ Investment: 12.2 million €  
incl. building expansions & conservation measures
- ◎ Energy savings per year:  
166,000 € (15 – 83%)
- ◎ CO<sub>2</sub> reduction: 468 ton/a

# On going process: New buildings as nearly zero energy buildings



- ⦿ Energy certificate class A targeted as min.
- ⦿ Replacing old buildings
  - 2 primary schools
  - kindergarten
  - home for elderly people
  - sports centre
  - office building
  - operational buildings
- ⦿ 1 school building in passive house standard

# ✓ Primary School Mariagrün (Graz)



- Project implementation: GBG Real estate company of the City of Graz
- Investment costs: **8.5 million €**
- Energy data:
  - Heating: 11.0 kWh/m<sup>2</sup><sub>EBFa</sub>**
  - Cooling: 1.0 kWh/m<sup>2</sup><sub>a</sub>**
  - primary energy: 86.0 kWh/m<sup>2</sup><sub>EBFa</sub>**
  - CO<sub>2</sub> Emission: 8.0 kg/m<sup>2</sup><sub>EBFa</sub>**
- Ecology:
  - HFKW free** isolation & foam system: yes
- Certificate:
  - klima:aktiv GOLD**



# ✓ Conversion of Traffic Lights to LED



- Project implementation with Energy Performance Contracting
- Retrofitting of 190 traffic lights on LED
- Total investment costs (Contractor): **2.3 million €**
- Energy cost savings: **185,000 €/a (68%)**
- Total savings (for re-financing): **339,000 €/a (75%)**
- CO<sub>2</sub> savings: **460 t/a (68%)**

# Energy Management in the City of Wiener Neustadt



**City Council**

**Energy concept**

Energy objectives  
and measures

**Energy Manager**

Energy Department

Energy Management  
System

Information for  
the citizen



**concrete implementations  
and projects**

# ✓ Wiener Neustadt – public swimming pool



## Results project (10 year contract):

- savings-guarantee: 214,000 €/a (33%)
- investment : 1.45 million €
- compared to in-house-solution: savings 15 % higher
- investment 370,000 € lower



# ✓ Wiener Neustadt – public buildings



## Results Pooling Project - 9 prospective buildings

- 15 year contract
  - savings-guarantee: 101,000 €/a (27%)
  - investment : 1 million €

# Why Energy Performance Contracting (EPC)



- ◎ initial reason for EPC:
  - need for investment in the an urgent project
  - but no financing available
- ◎ why EPC?
  - no budget occupation for investment
  - outsourcing of technical and economic risks
  - professional, performance orientated maintenance and monitoring



# The Principle of EPC



**James Watt, 18<sup>th</sup> century**

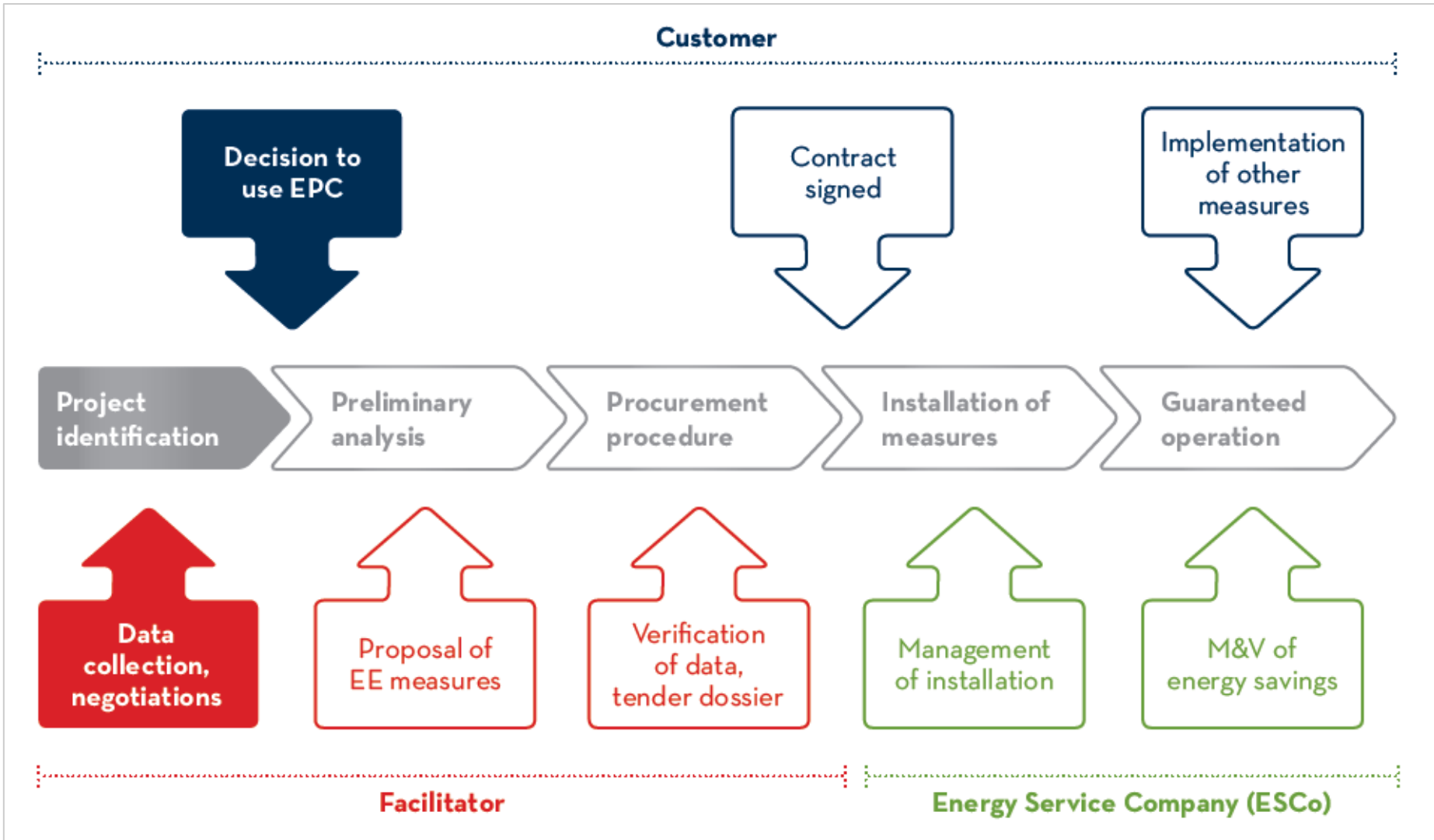
*"We will leave a steam engine free of charge to you. We will install these and will take over for five years the customer service.*

*We guarantee you that the coal for the machine costs less, than you must spend at present at fodder (energy) on the horses, which do the same work.*

*And everything that we require of you, is that **you give us a third of the money, which you save.**"*

source: Grazer Energy Agency

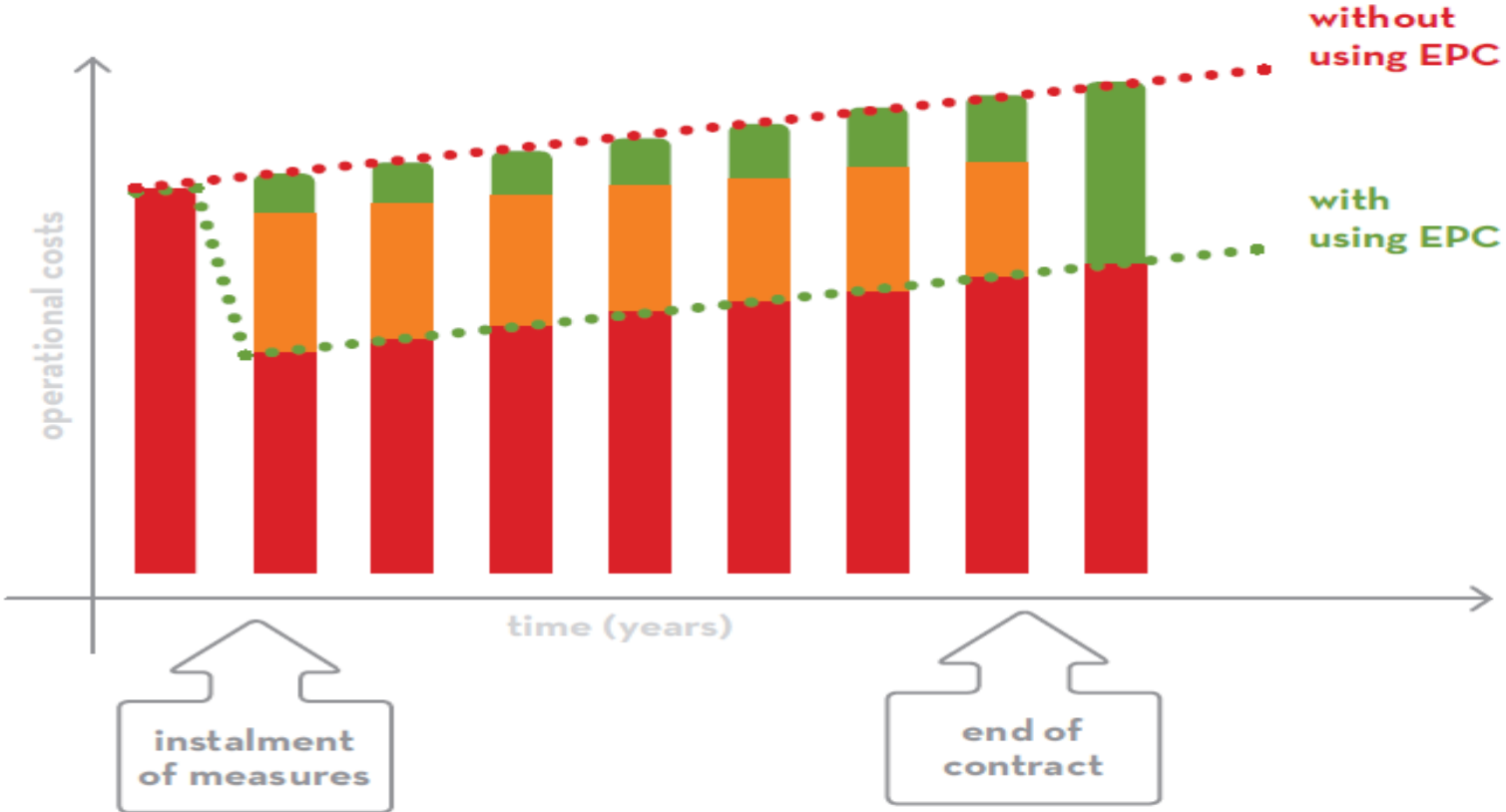
# An EPC project – Player and Phases



source: Grazer Energy Agency

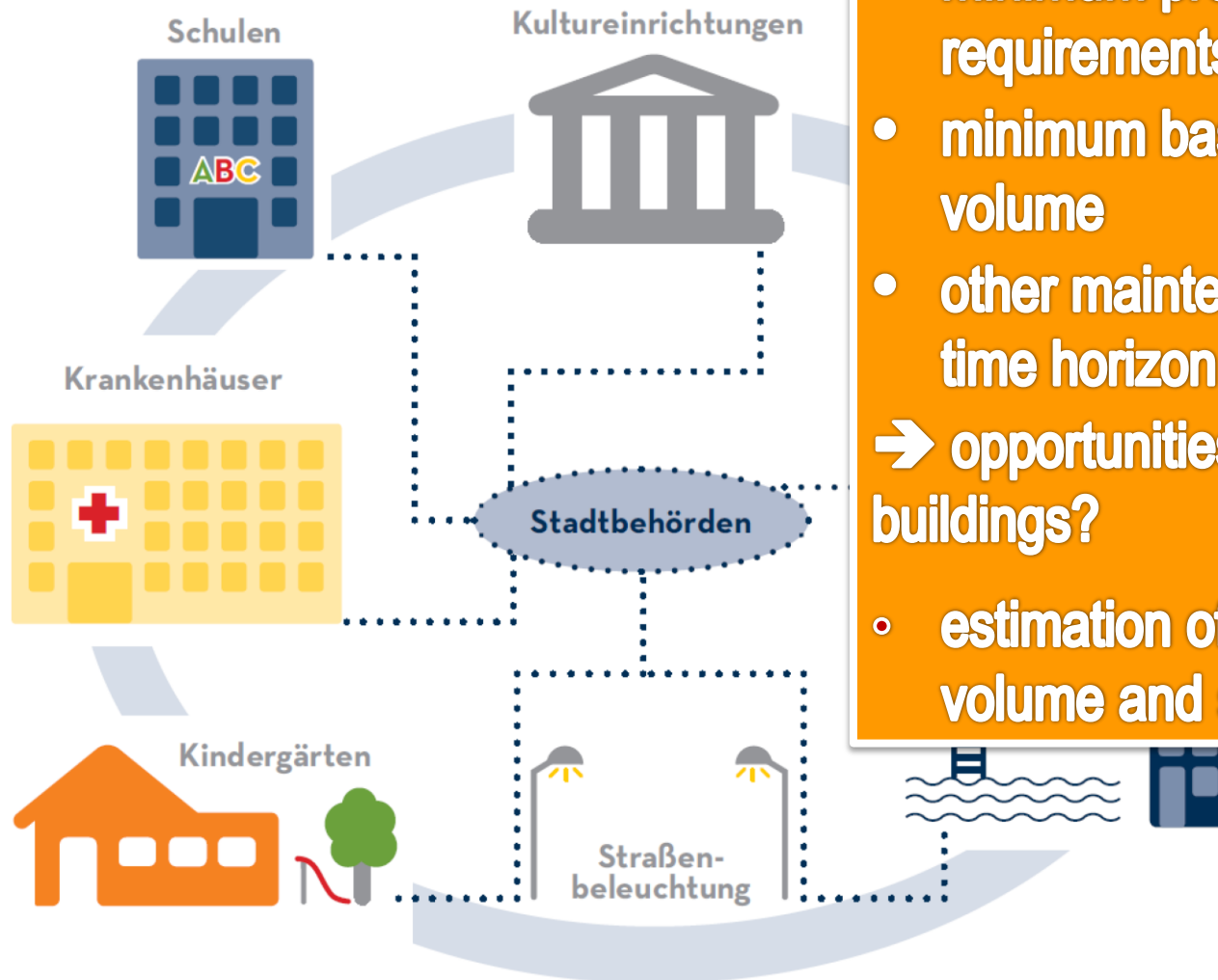
# The Systematics of EPC

## Savings used for re-financing



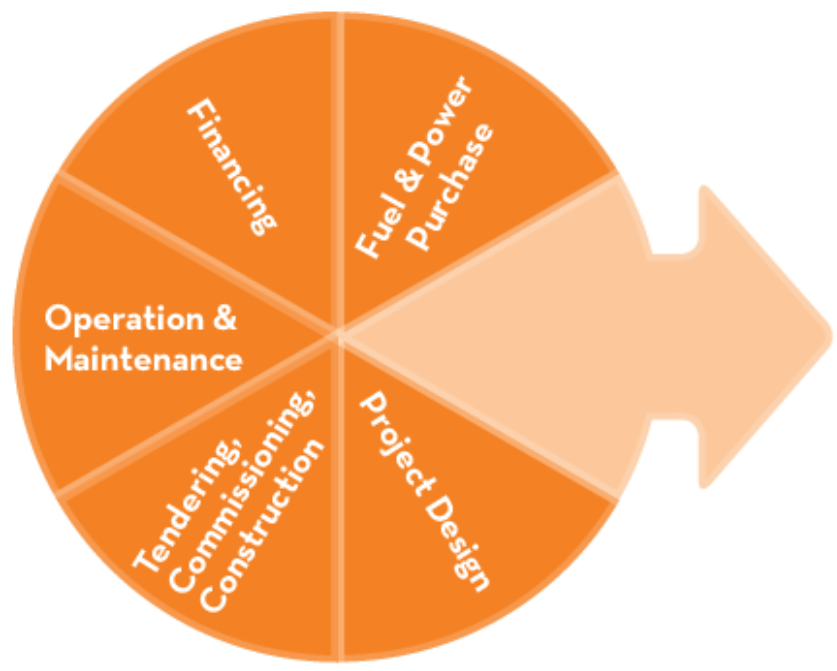
- benefit to customer
- operational costs
- guaranteed savings (as volume of investment)
- + = savings

# EPC Step 1: project identification



- suitable measures
  - minimum project requirements:
  - minimum baseline and volume
  - other maintenance contracts, time horizon
- opportunities for pooling of buildings?
- estimation of investment volume and saving potential

# The Value of EPC



**„ENERGY-  
CONTRACTING“**  
A modular service  
package incl.  
outcome  
guarantees

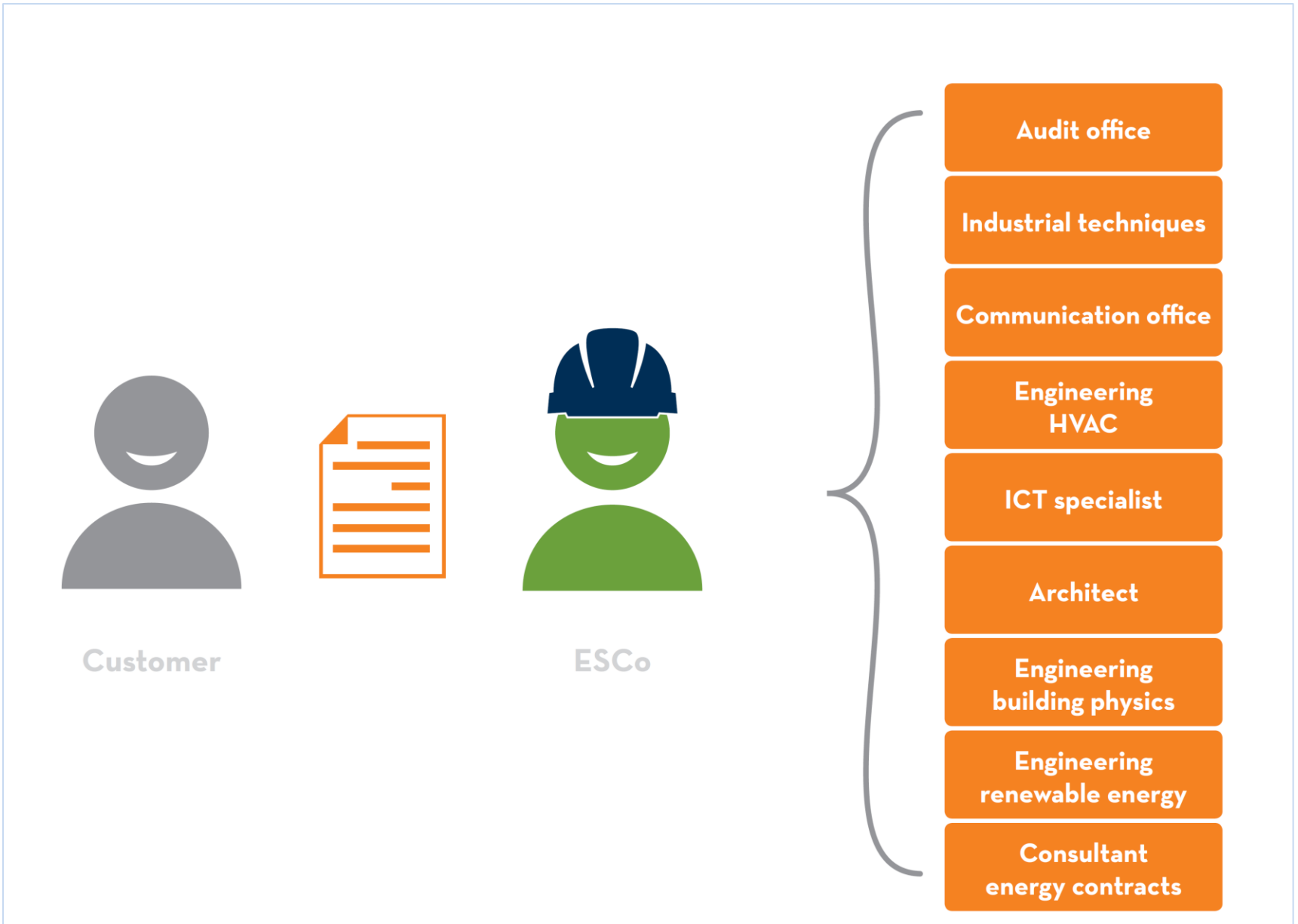
**Added value  
through outsourcing:**

**Function-,  
performance- and  
price guarantees**

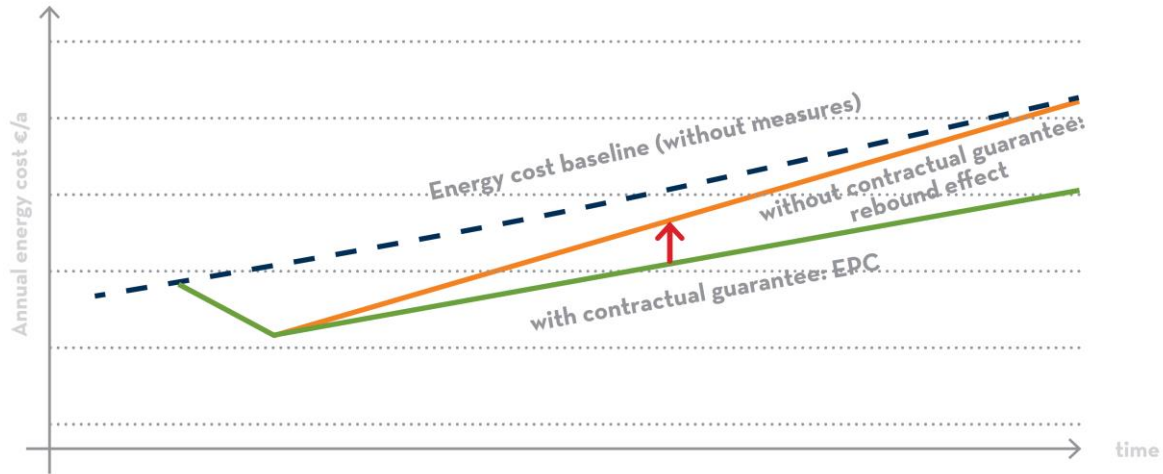
**Outsourcing of  
commercial  
and technical risks**

**“Energy-Contracting“ is the guarantee, that the overall system performs to specifications. Over the whole contract term!**

# The Energy Service Company (ESCo) adds:



# Added value of EPC



- no rebound-effect through performance-guarantee
- ESCo bears experience of dozens of facilities
- owner/user can concentrate on his core business

## Back to the initial question:

How can municipalities initiate energy efficient renovation and construction?

Why are so many measures not being implemented?

1. no time
2. no money
3. lack of know-how
4. lack of trust

### **WE NEED**

- decisions for implementation
- money to invest or creative financing systems like EPC
- experts in the administrations
- saving performance





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