

# EnPC/ESCO in Romania - EBRD Pilot project (GEF)

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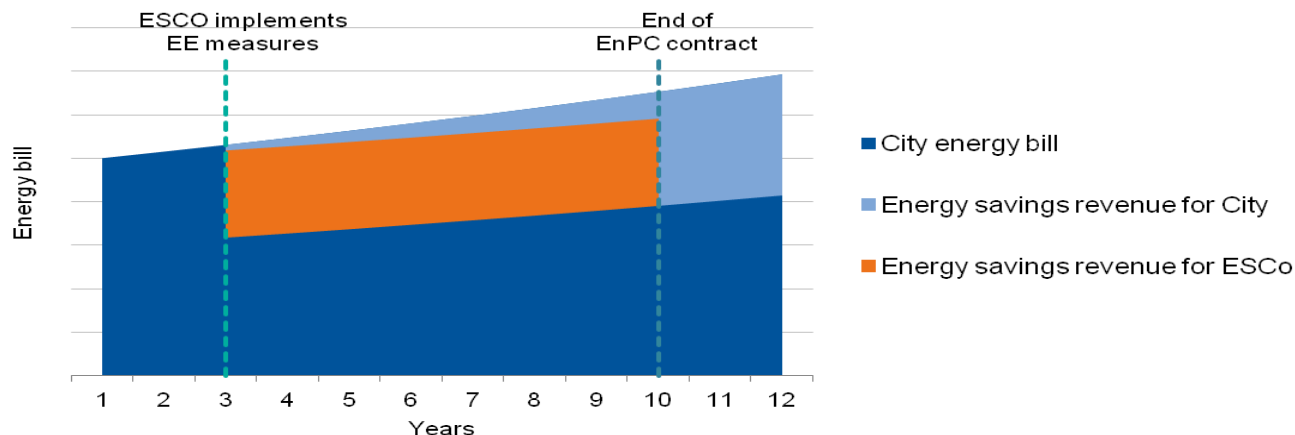
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**European Bank**  
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## ➤ Concepts

- **Energy Performance Contracting (EnPC)** – in line with EU recommendations, the proposed scheme uses financial engineering to **leverage public funds with private finance** from Energy Service Companies (ESCOs)
- **ESCOs** are private companies able to design, implement and operate energy efficiency projects for public clients, (partially) paid from their own resources and then recovered from future savings on energy bills. The ESCOs' own funding can be combined with grant funds
  - The basic principle: ESCO finances investments with commercial payback – City only pays for the rest, using for instance, grants



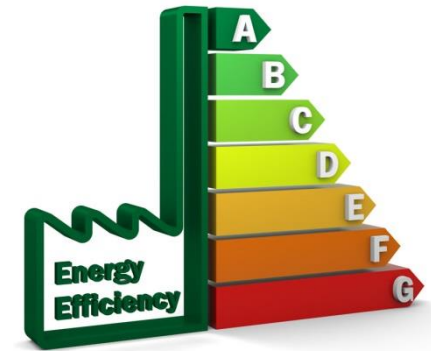
Source: BEA- Berliner Energy Agency

### ➤ **Key elements – Guaranteed services of the ESCOs**

- Energy saving guarantee and share the savings with the Client
- Hardware investments (amount and structure)
- Energy management system
- Maintenance (of energy saving measures)
- Compliance with required comfort levels
- User motivation concept (e.g. incentive schemes)
- Verification of energy savings and remuneration

### ➤ **Advantages for Municipalities:**

- Guarantees for savings and operation
- Shifting technical and economical risks to the ESCO
- (Part-) repayment from future energy cost savings
- Saving investment costs through third-party financing
- Outsourcing of interface problems, focusing on the own key business
- Eliminating deficiencies, cash efficiency potentials
- Long-term increase of comfort level and property value



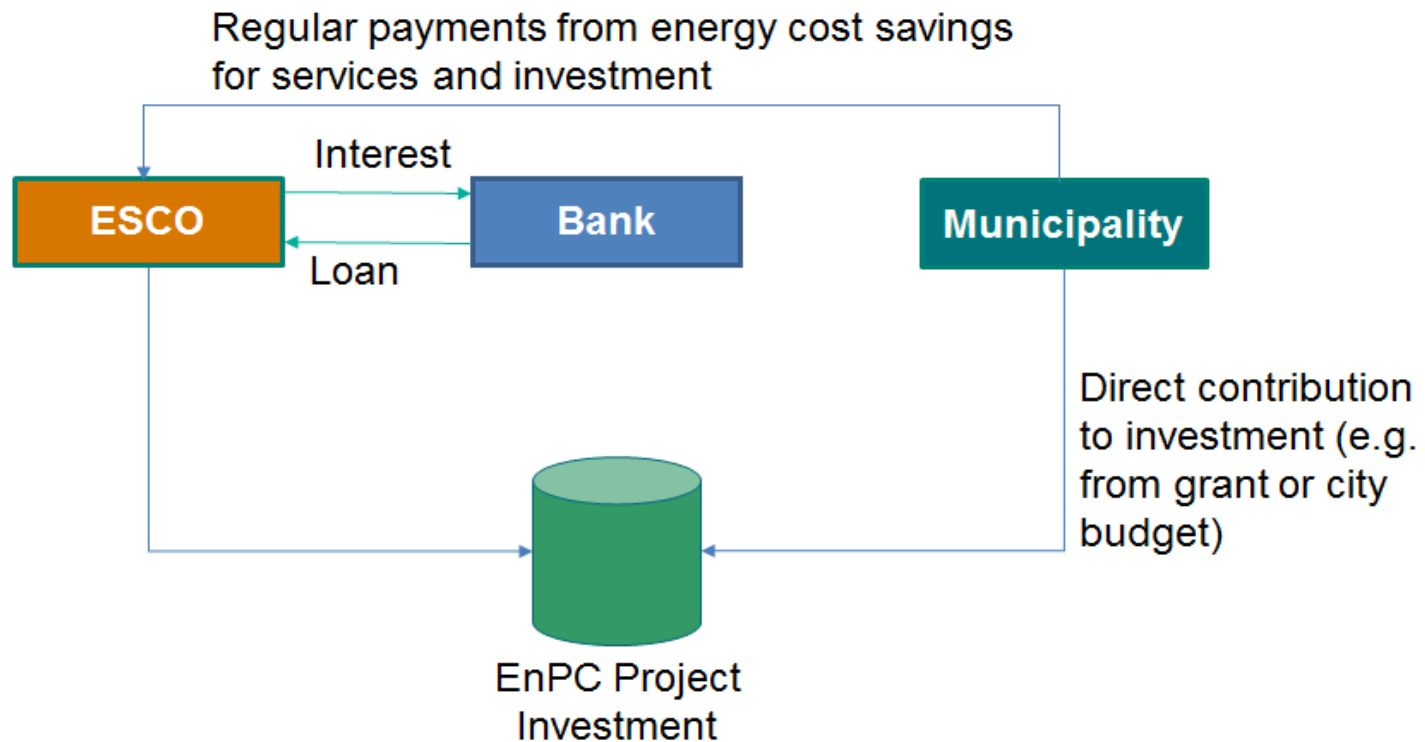
### ➤ Suitability criteria of facilities for EnPC

- High total consumption and high specific indicators (e.g. energy consumption per gross area)
- Ideally, owner = user = budget responsible (to reduce complexity). If parts of the facility are rented to third parties it has to be checked whether allocation of the costs/savings is possible
- Secured ownership for the EnPC Contract's duration
- Potential for energy efficiency measures with acceptable payback period (for electricity, heating and possibly hot water) exist, (thermal insulation measures are less suitable due to long payback periods)
- Steady and predictable use of the facility and constant energy consumption in the past 3 years and for the foreseeable future
- Reliable metering available for electricity, gas and district heating and, if necessary, water.



### ➤ Potential financing structures

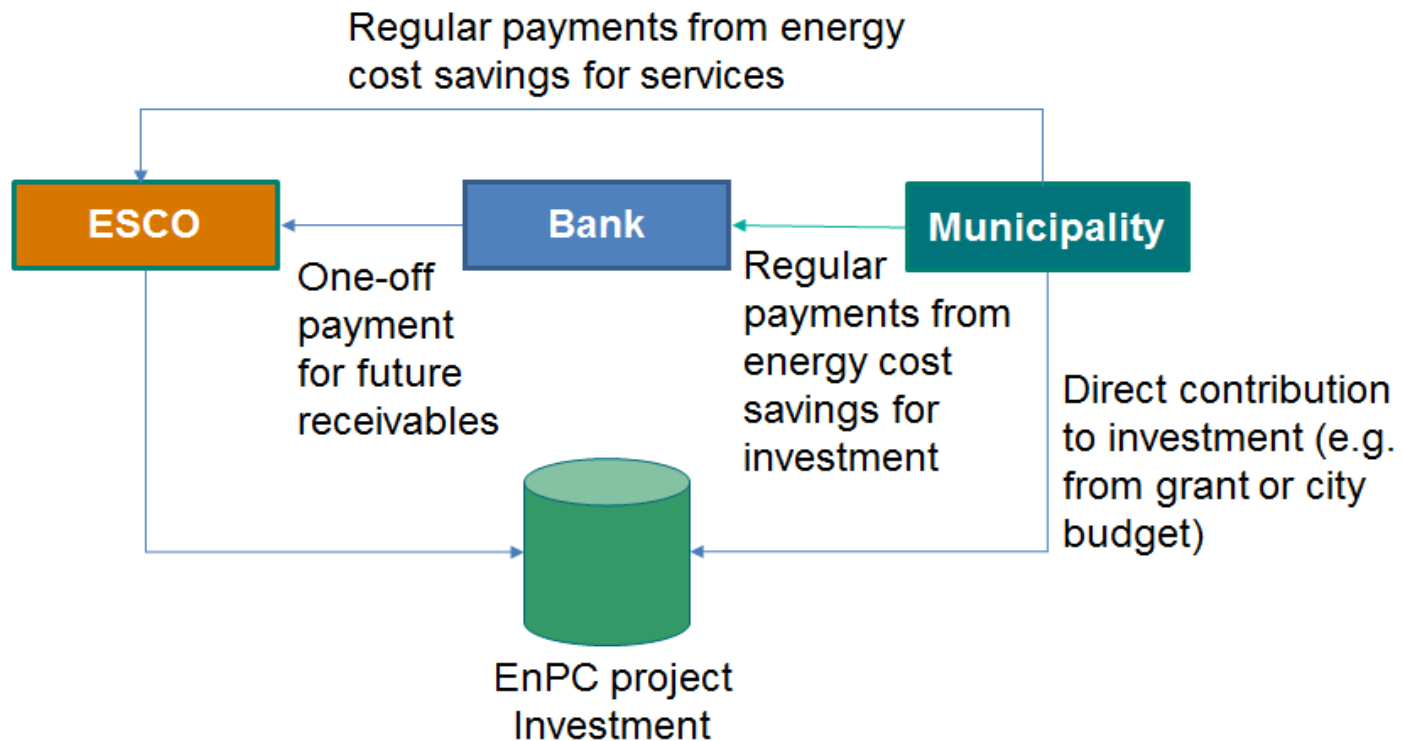
- **Option 1:** Combination of ESCO financing and contribution of municipality



Source: BEA

### ➤ Potential financing structures

- **Option 2:** Combination of forfeiting (ESCO sells future receivables to bank) and contribution of municipality



Source: BEA

# TYPES OF ENPC PILOT PROJECTS UNDER DEVELOPMENT

## ➤ **Projects under development**

Currently, **two project types** are under development in several cities:

- **Schools & Kindergartens** (building pools of several educational institutions)
- **Hospitals** (several buildings belonging to a single institution)



## ➤ Schools

- Number of buildings: 5 – 20 buildings / pool (belonging to 5-10 educational institutions)
- Year of construction : 1950s – 1980s
- In some cases, standard comfort levels may not have been reached in the past (in terms of room temperatures)
- Energy consumption: 1,500 ... 5,000 MWh/year (Baseline determined from meter-based energy bills)
- Typical energy cost baseline: approx. 100,000 – 300,000 EUR/year

Source: Tractebel Engineering research



## ➤ **Examples:**

- Thermal enveloping
- Lighting refurbishment
- Heating system measures
  - Control and monitoring of room temperatures
  - Repair / replacement of heating installations (radiators, pipework),
  - Improvement of heating system,
  - Thermal insulation of thermal pipes for the schools' heating boilers (where the case)
  - Cleaning of heat radiators that can still be used
  - Replacement of existing radiator valves with thermostatic valves,
  - Hydraulic and thermal balancing of heating systems
  - Etc.
- Energy management system etc.



- Typical investment estimate: 500,000 – 1,500,000 EUR (incl. thermal insulation measures)
- EnPC Performance Duration: 10 years
  - Client contribution for financing of investment required (approx. 30-50%)

# HOSPITALS: TYPICAL PROJECT CHARACTERISTICS

## ➤ Hospitals:

- Number of buildings: 5 – 15 buildings /hospital
- Years of construction : 1930s – 1950s
- Energy consumption: 2,000 ... 5,000 MWh/year (Baseline determined from meter-based energy bills)
- Typical energy cost baseline: approx. 150,000 – 250,000 EUR / year

## ➤ **Examples:**

- Thermal enveloping
- Co-generation
- Lighting refurbishment
- Heating system measures
  - control and monitoring of room temperatures
  - repairs / replacement of heating installations (radiators, pipework),
  - improvement / replacing of heating system,
  - thermal insulation of thermal pipes for the hospitals' heating boilers (where the case)
  - cleaning of heat radiators that can still be used
  - replacement of existing radiator valves with thermostatic valves,
  - hydraulic and thermal balancing of heating systems
- Energy management system etc.



- Typical investment estimate: 500,000 – 1,000,000 EUR (incl. thermal insulation measures)
- EnPC Performance Duration: 10 years
  - Client contribution for financing of investment required (approx. 20-40%)

## ➤ **EnPC- Project preparation and development**

### ➤ **Step 0: Initial decision / awareness raisings / communication**

- Information
- Checking the data situation

Integration of:

- Decision maker / professional departments
- Approval authorities

### ➤ **Step 1: Building selection / Definition of targets**

- Energy costs of electricity, heat etc.
- Using data (operating hours, numbers of pupils etc.)

Fixing of:

- Energy cost-baseline
- System request (e.g. list of measures)

## Competition (example: “Negotiated procedure with pre-qualification”)

### ➤ Step 2:

#### **Call for tender and pre-qualification**

- Announcement of tender, Call for Expression of Interest
- Pre-qualification of eligible bidders and invitation to offer preparation to max. number of bidders

Presentation of tender documents, model contract and assessment criteria

### ➤ Step 3:

#### **Rough analysis / laying of offer (ESCO)**

- Site-visits at the buildings,
- Validation of data, analysis of saving potential
- Determination of measures and saving guarantee

Offer with:

- Saving guarantee
- Technical measures and investment plan

## Competition (example: “Negotiated procedure with pre-qualification”)

### ➤ Step 4:

#### Checking the offer / negotiations

- 1st evaluation, pre-selection of best offers
- Negotiations with max. 3 bidders
- Offer evaluation according to assessment criteria

#### Cost – Benefit analysis:

- Technical-economic analysis
- Evaluation of the (technical) quality

### ➤ Step 5:

#### Signing of the contract

- Approval by the authorities

#### Contract includes:

- Rights and responsibilities
- Cooperation principles



## ➤ Energy Service / Guarantee Contract

### ➤ Step 6:

#### **Implementation phase (ESCO)**

- Detailed planning and designing (“Design Services Stage”)
- Technical implementation (“Preparatory Phase”)
- Supervision of works by licensed company/engineer

ESCO is responsible for planning, designing, financing and construction in coordination with the building owner

### ➤ Step 7:

#### **Inspection**

- Final approval of construction

Handing over of constructing works



# ENPC – PROJECT PROCEDURE

## ➤ Energy Services/ Guarantee Contract

### ➤ Step 8:

#### **Performance phase (ESCO)**

- Energy management and -controlling
- Maintenance of system
- User information and motivation where appropriate

ESCO takes measures as needed:

- For achieving cost reductions as guaranteed
- For ensuring operating safety

### ➤ Step 9:

#### **Expiration of contract**

Building owner assumes:

- Responsibility for operation
- Full amount of savings

- **The proposed Contract involves two stages :**
  - a) The first stage (“**Design Services Stage**”) during which the Contractor shall provide design services, consisting in the preparation of the Technical – Economic Documentation;
  - b) The second stage (“**Energy Efficiency Services Stage**”) is performed in two phases:
    - The “**Preparatory Phase**” - the Contractor shall implement the energy saving measures; and
    - The “**Performance Phase**” - the Contractor undertakes to provide energy efficiency services, based on the measures implemented during the Preparatory Stage
  
- Considering that the payments shall be made depending on the energy performance improvement, it follows that such payments shall exclusively be made during the “Performance Phase”.

# GUARANTEED ENERGY SAVINGS



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- The percentage and amount of the guaranteed savings are calculated by reference to the energy consumption mentioned in EnPC as “**Baseline**”.
- **The Baseline** represents the energy consumption of the object of the contract in one calendar year (*e.g.* 2013), as resulting from the invoices received by the beneficiary from energy providers (if invoices are metering real consumption and are reliable).
- If, during the reference year, the comfort standards required under EnPC were not observed, the Baseline shall be determined by adjusting the amounts of the invoices by a percentage agreed upon by the parties.

# MAIN OBLIGATIONS OF THE PARTIES



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## ➤ **Main obligations of the Contractor :**

- a) To implement the energy efficiency measures, including the planning, design, authorization, financing, procurement and building of any operation, process, part, component, device, subsystem, operational unit, equipment or operation system, as well as any other connected activities in relation to the object of the Contract;
- b) To provide energy efficiency services, consisting of securing the guaranteed energy savings throughout the Performance Stage, by using the measures implemented as per letter a), as well as any other measures deemed fit. Also, the Contractor shall provide operation and maintenance services in respect of the measures.

## ➤ **Main obligations of the Beneficiary:**

- a) To provide payment of the energy efficiency services.

On an annual basis, the Beneficiary and the Contractor shall provide the Contractor to fulfill its obligations as to secure the guaranteed savings. According to the parties' findings, the following situations may occur:

- a) If the guaranteed savings have been achieved, the Contractor is entitled to collect the agreed remuneration;
- b) If the guaranteed savings have been exceeded, the Contractor is entitled to collect the agreed remuneration and a percentage of the additional saving achieved; and
- c) If the guaranteed savings have not been achieved, the Contractor shall be paid only in relation to the achieved savings.

# THANK YOU!

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