ENERGY EFFICIENCY IN BOSNIA AND HERZEGOVINA

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Project co-financed by the European Regional Development Fund

Partner: „PREDA-PD“ PRIJEDOR BIH

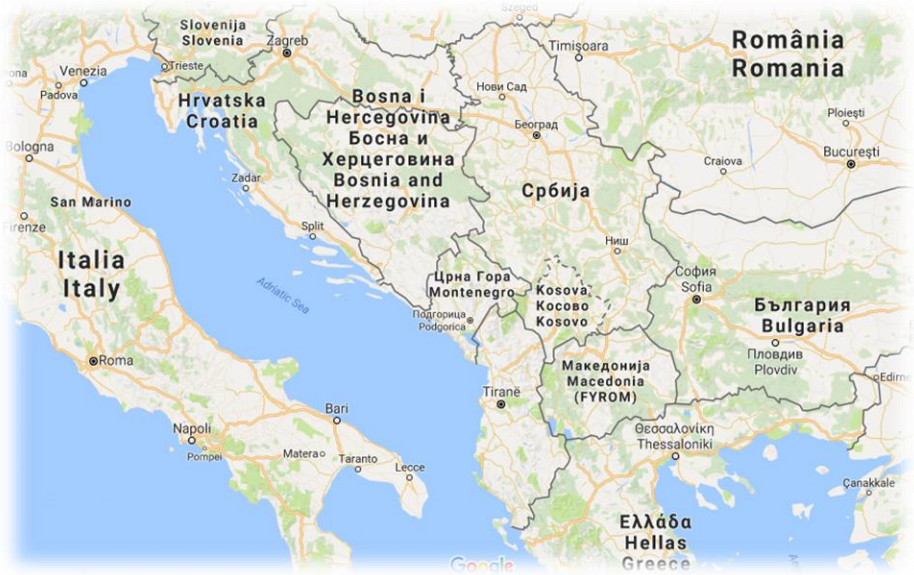
Contents

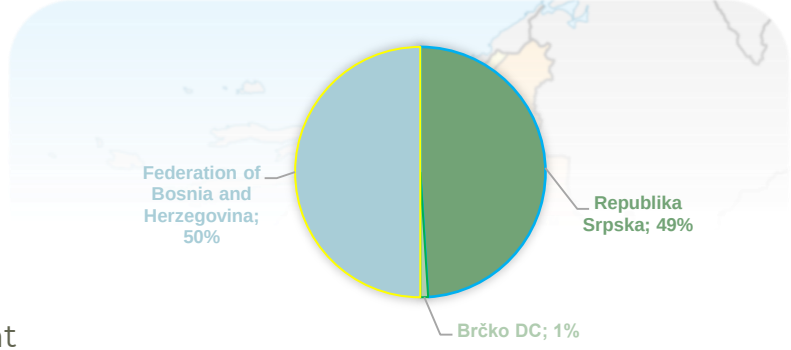
General Infromation

Aera: 51.197 km²

Population: 3,5 million

Entities: Two





Project co-financed by the European Regional Development Fund

Institutional and Legal Framework

- Council of ministers BiH
- Government of Republic of Srpska
- Government of Federation of BiH



Sate Level (BiH)

- International Cooperation
- Coordination

Ministry of Foreign Trade and Economic Relations

Entity Level (Republic of Srpska) (Federation of BiH)

- Law on Energy Efficiency
- Law on physical planning and construction
- Strategic documents

Ministry of Physical Planing RS, FBiH

Ministry of Energy RS, FBiH

- Financing

Fund for Enviromental Protection and EE RS, FBiH

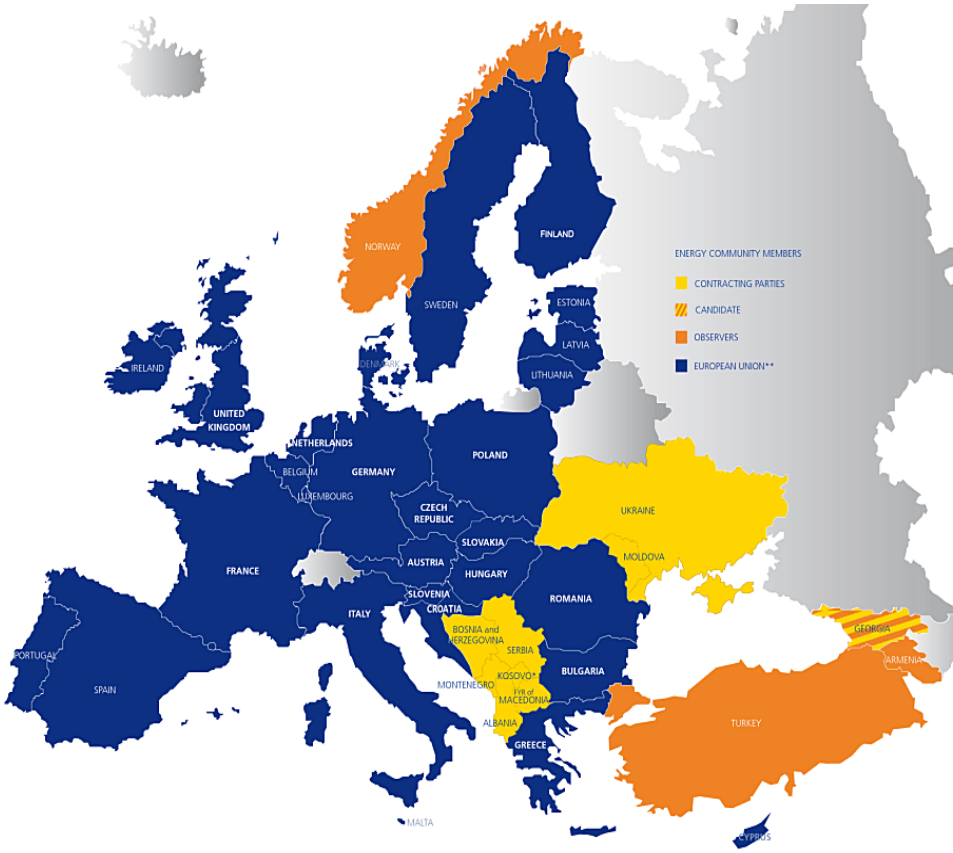
Energy Community Treaty

BiH obligations under the Energy Community Treaty

- **Transposition and implementation of the following directives:**
  - **Directive 2010/31/EU** on the energy performance of buildings
  - **Directive 2010/30/EU** on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products
  - **Directive 2006/32/EU** on energy end-use efficiency and energy services
  - **Directive 2012/27/EU** on energy efficiency, which obliges contracting parties to much more stringent requirements that must be met in the field of energy efficiency

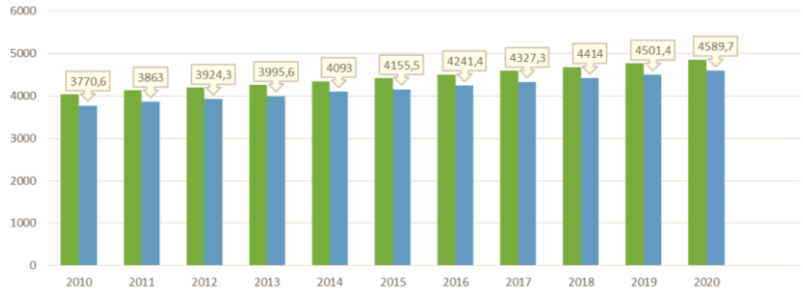
- **The development of the National Energy Efficiency Action Plan (NEEAP)**

- **Modes and mechanisms to achieve defined indicative targets on the reduction of final energy consumption**



Energy efficiency potential in BiH

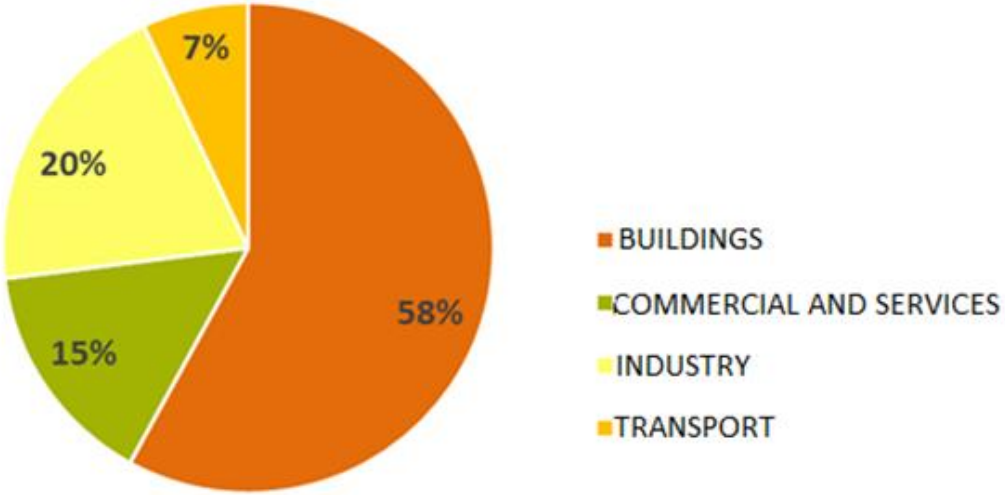
INCREASING FINAL ENERGY CONSUMPTION



The average annual required energy for heating of typical **public building** is about **220 kWh/m²a**

The average annual required energy for heating of typical residential building is about **180 kWh/m2**

FINAL ENERGY CONSUMPTION



Significant conservation potentials

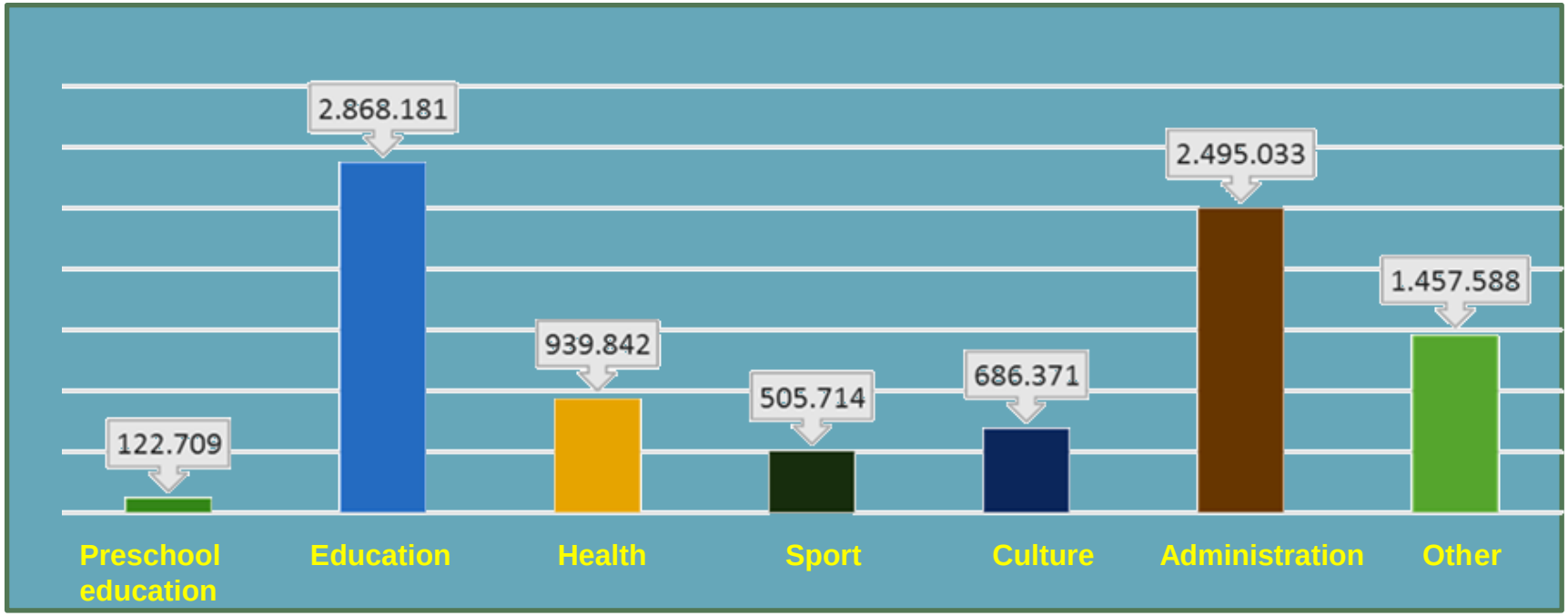
Very high energy consumption and costs

Typology of public buildings in BiH

Total number of public buildings estimated 7.600

Total useful area of public buildings 9.1 milion m2

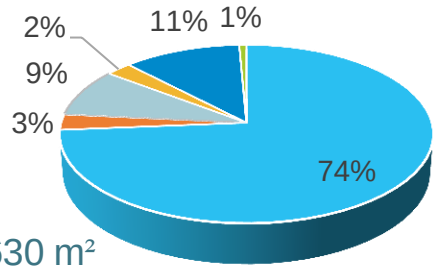
Final matrix of tipical buildings 7 typs / 6 time periods



Typology of residential buildings in BiH

Gross surface of residential buildings in BiH per type

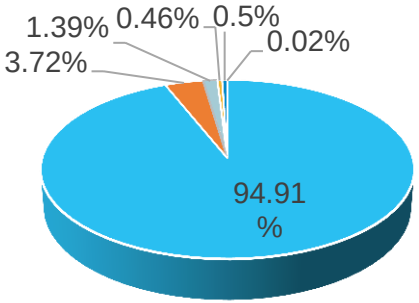
- Single-family houses
- Individual terraced houses
- Multi-family houses
- Attached apartment building in urban blocks
- Apartment blocks
- High-rise buildings



Total area: 162.928.630 m²

Number of residential buildings in BiH per type

- Single-family houses
- Individual terraced houses
- Multi-family houses
- Attached apartment building in urban blocks
- Apartment blocks
- High-rise buildings

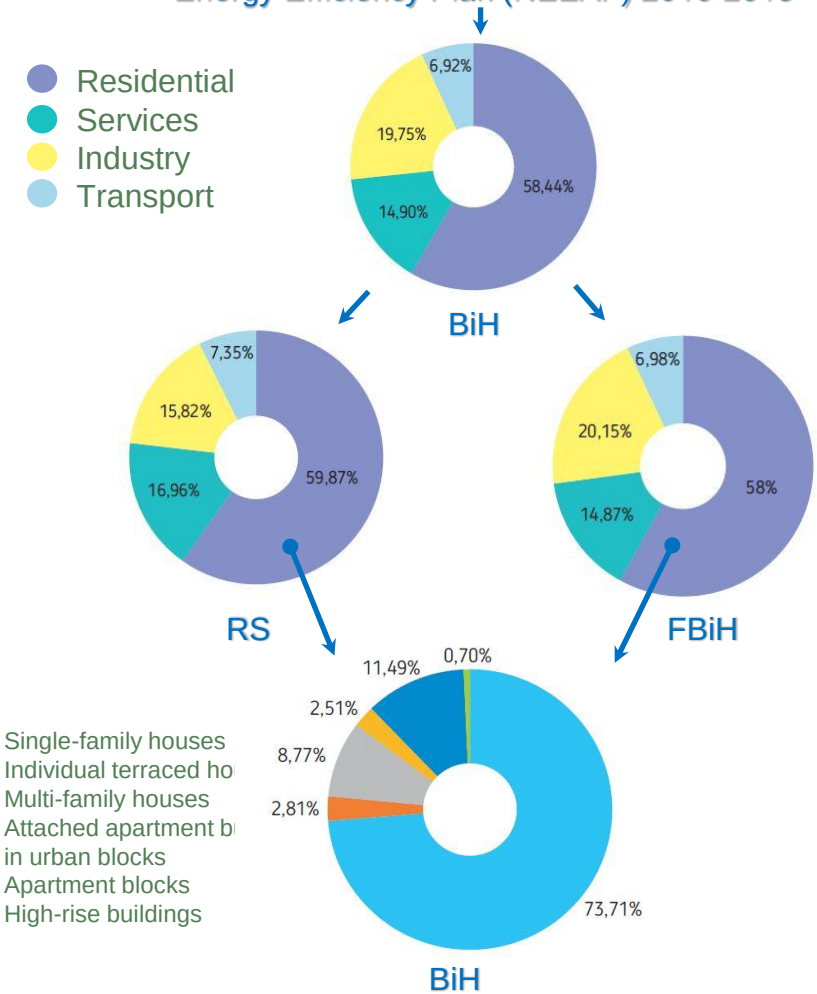


Total number of buildings: 861.965

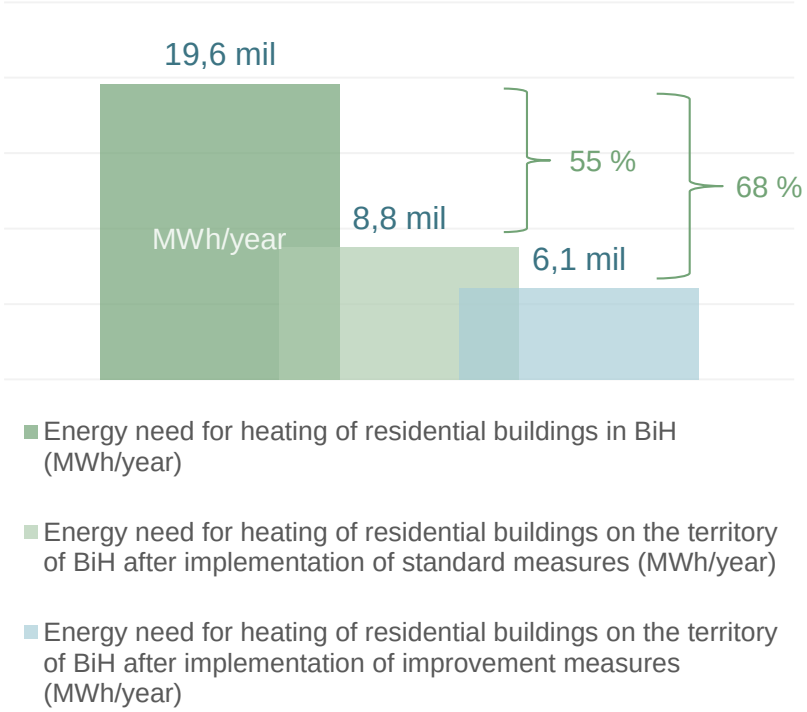
CONSTRUCTION TYPE	Thermal insulation (λ=0,041 W/mK) thickness: IMPROVEMENT 1	Thermal insulation (λ=0,041 W/mK) thickness: IMPROVEMENT 2
exterior wall	10cm	20cm
interior wall between heated and unheated space	-	5cm
ceiling toward non-heated attic	10cm	20cm
ceiling toward non-heated basement	10cm	20cm
flat roof	20cm	30cm
sloped roof	20cm	30cm
floor on the ground	-	10cm
windows	1,6 W/m K	1,0 W/m K

Typology of residential buildings in BiH

Overview of Final Energy Consumption by Sectors for 2010, according to the First National Action Energy Efficiency Plan (NEEAP) 2010-2018



Comparison of energy required before and after EE measure



Significant potential for investments in millions of euros – façade system only- 2 bilion EUR

World Bank EE BiH Project - BEEP

Repayment period: 25 years,

Grey period 5 years,

Interest rate 1.25%

Amount: 32.000.000 USD

Implemetation May 2015 – December 2019

Components:

Investments in Energy Efficiency of Public Buildings – 86%

Support for creating flexible financing mechanisms and capacity building – 9%

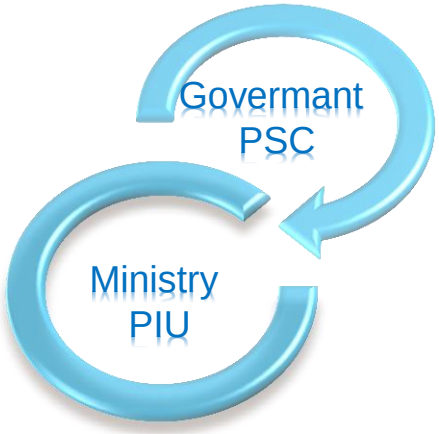
Project management - 5%

Total number of buildings 85

Helth

Education

Project organization



Project indicators for Republic of Srpska

- Projected lifetime energy savings 260.000 MWh
- Projected lifetime fuel savings 1.081.919 MJ
- Lifetime GHG savings 97.676 CO_2
- Direct project beneficiaries 342.354 users
- Number of trained municipal energy managers 103

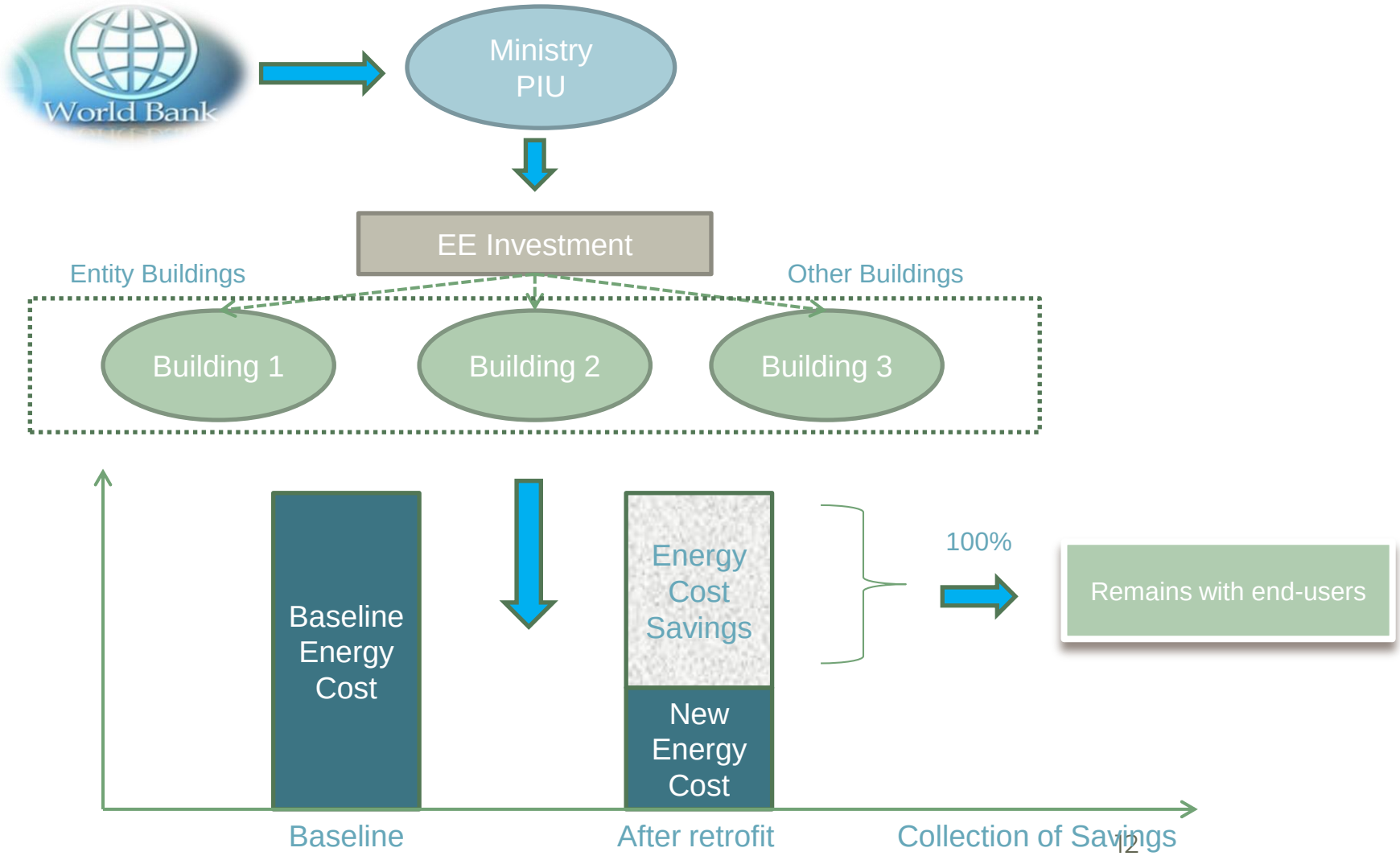
Elementary school „Sveti Sava” Bilića

- Year of EE reconstruction 2016/17
- Contract – 507.138,50 BAM
- Payback - 5.22 yeras
- Energy Savings - 73.69% yeras

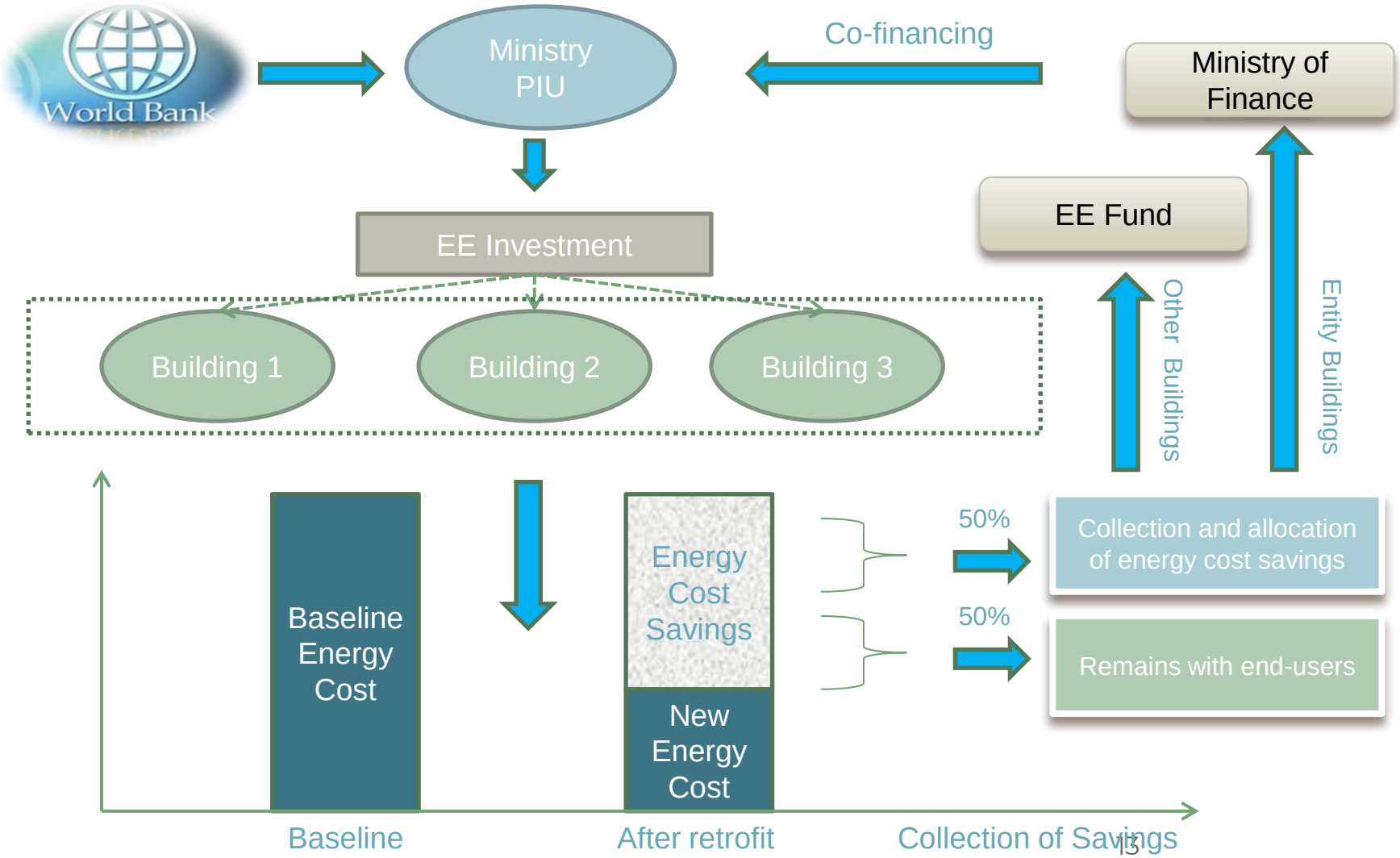
Before

After

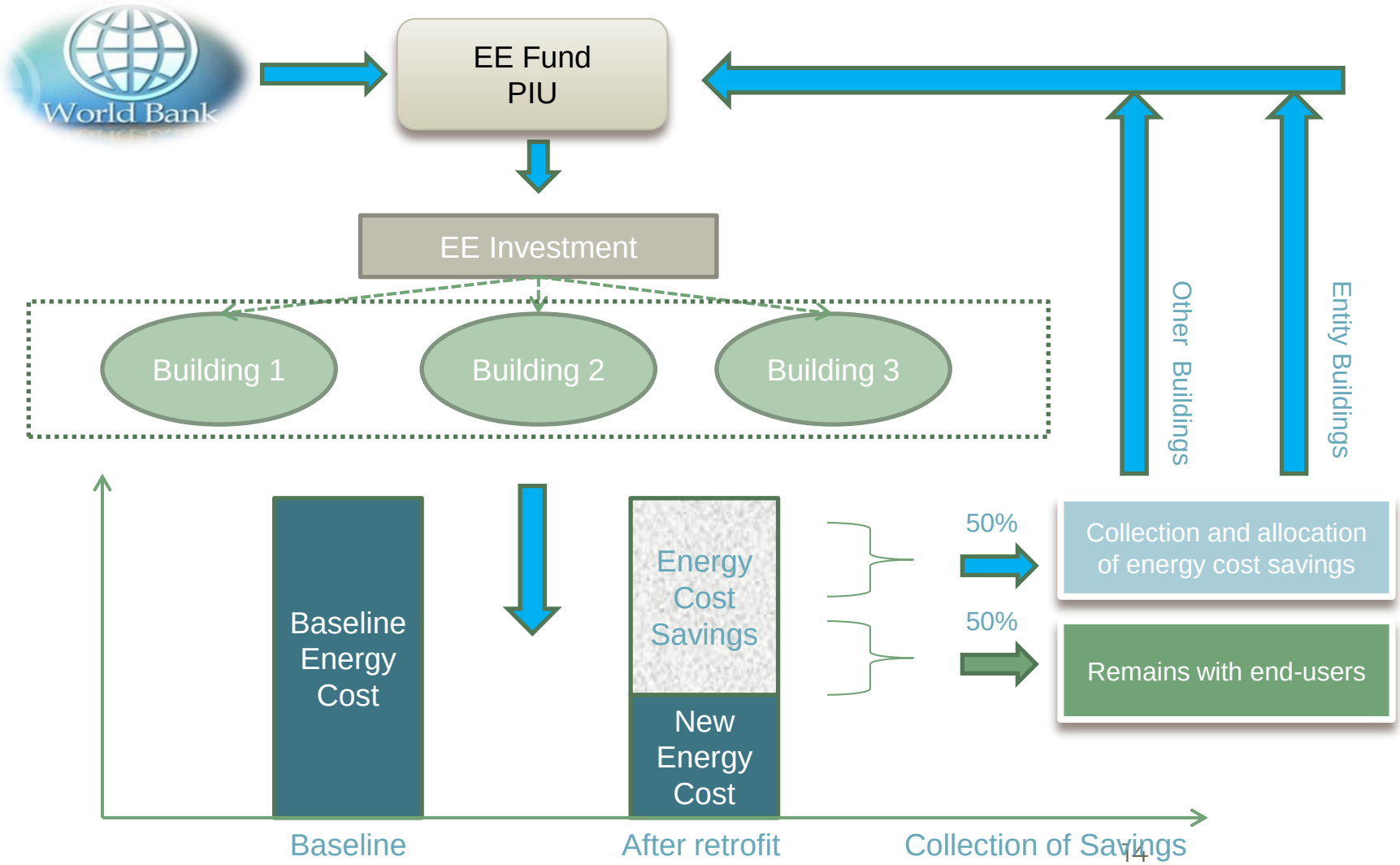
BEEP - Implementation



BEEP 2 – Collection of Savings



Public ESCO – Collection of Savings

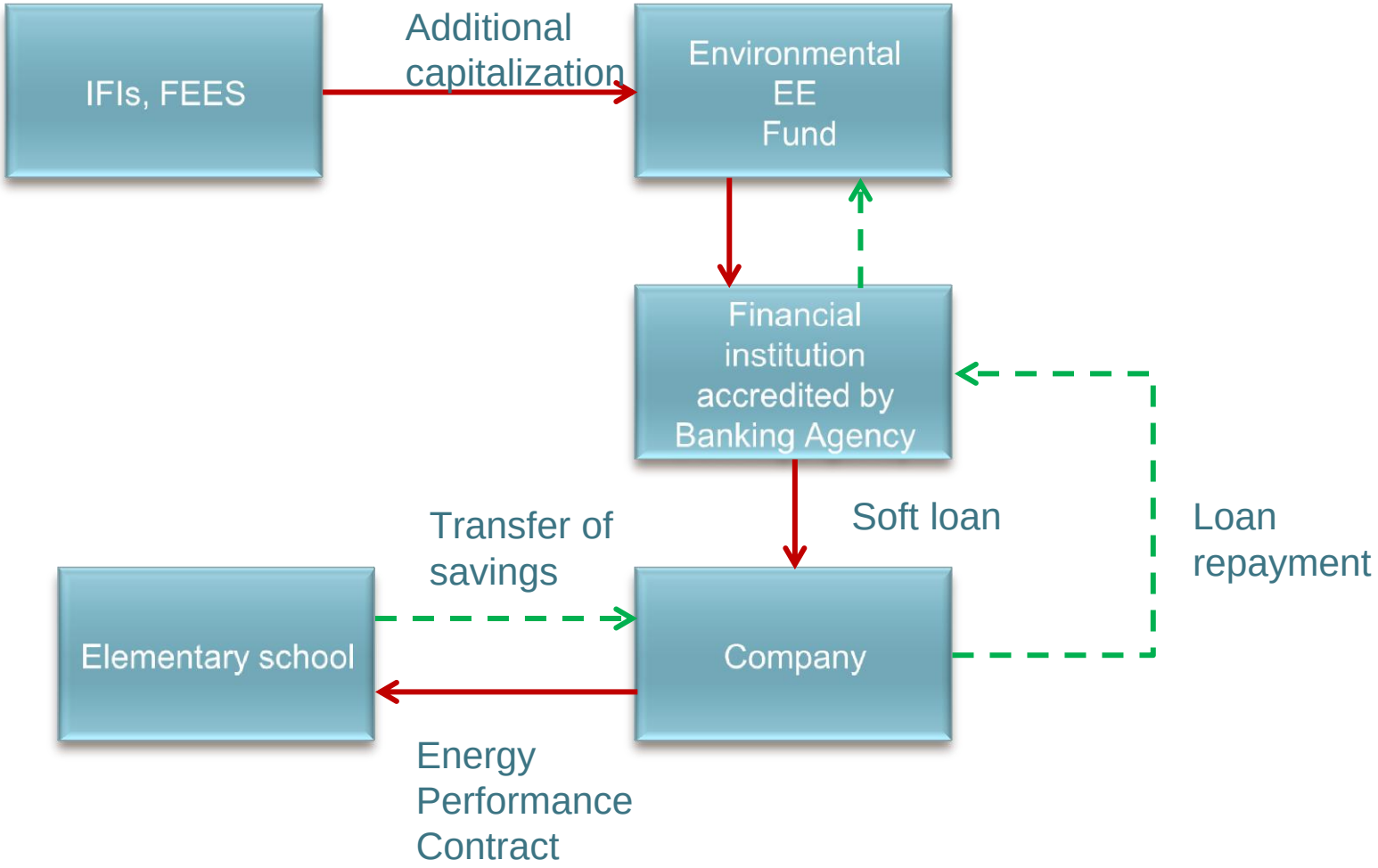


EE Fund – Public ESCO

Other suggested products for Public ESCO :

- Revolving Fund
- Risk reduction guarantees
- Forfaiting

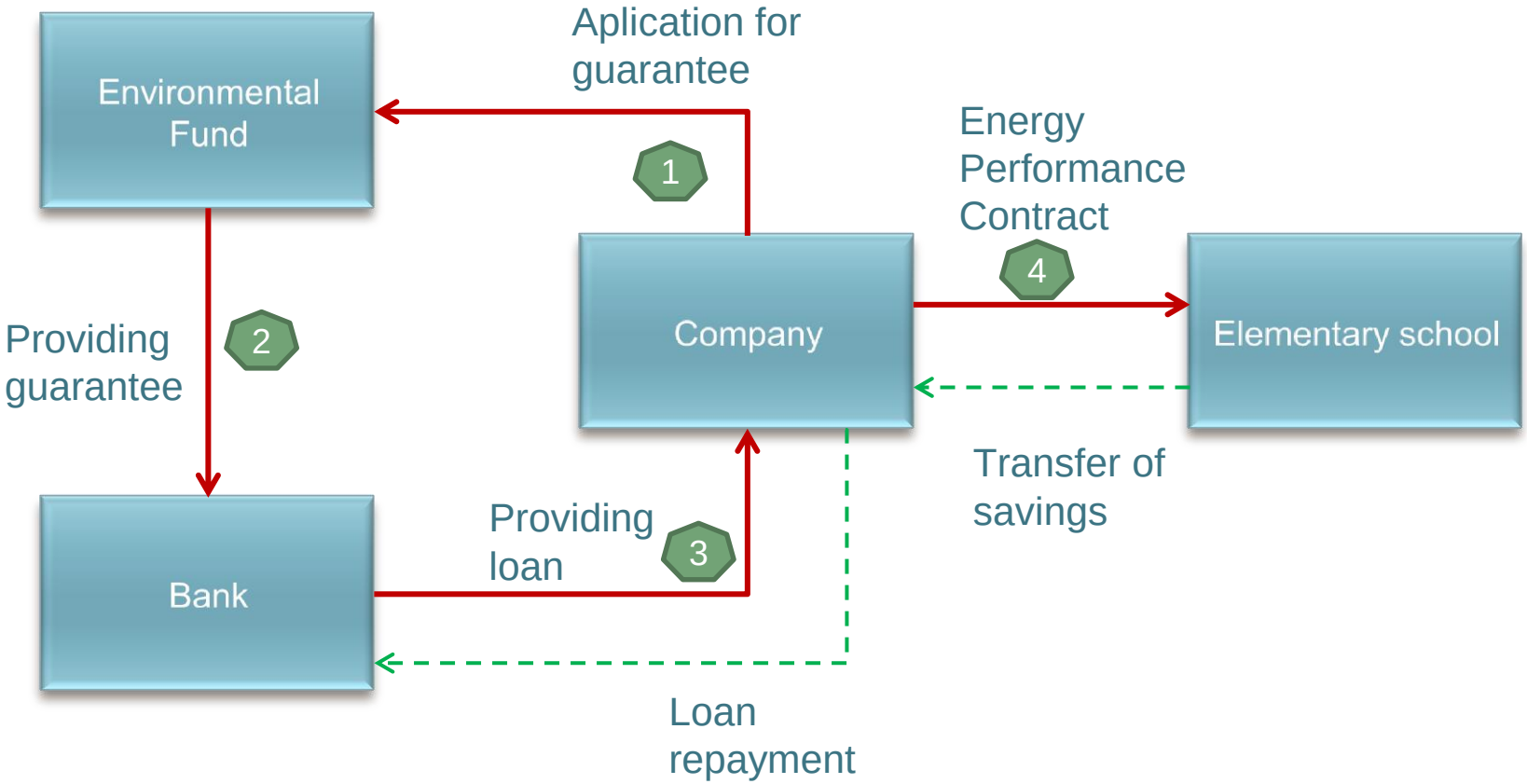
Public ESCO – Revolving Fund



Public ESCO – Soft Loan

- **Shortcomings of the suggested model:**

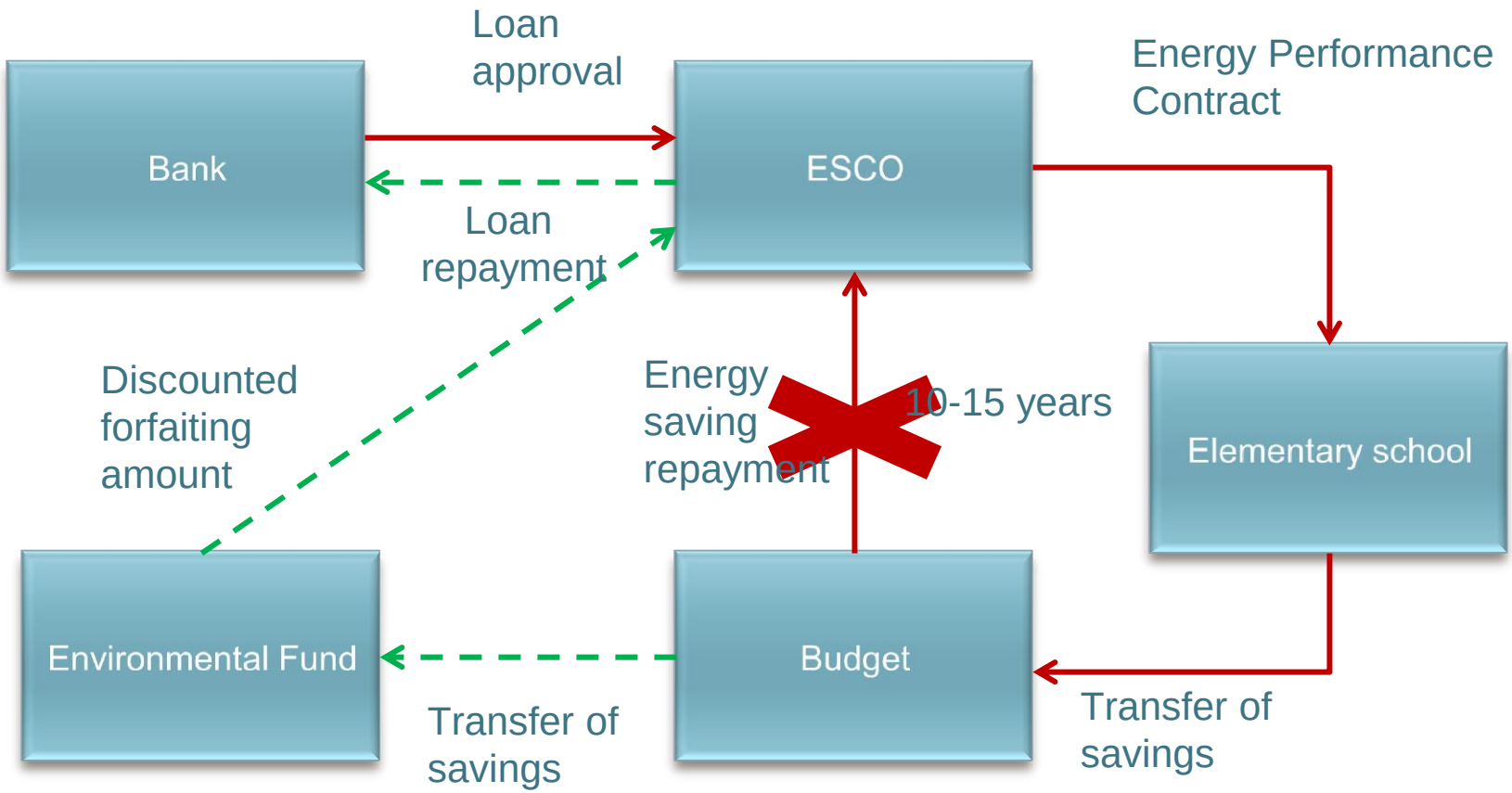
Public ESCO - Risk Reduction Garantee



Public ESCO - Risk Reduction Garantee

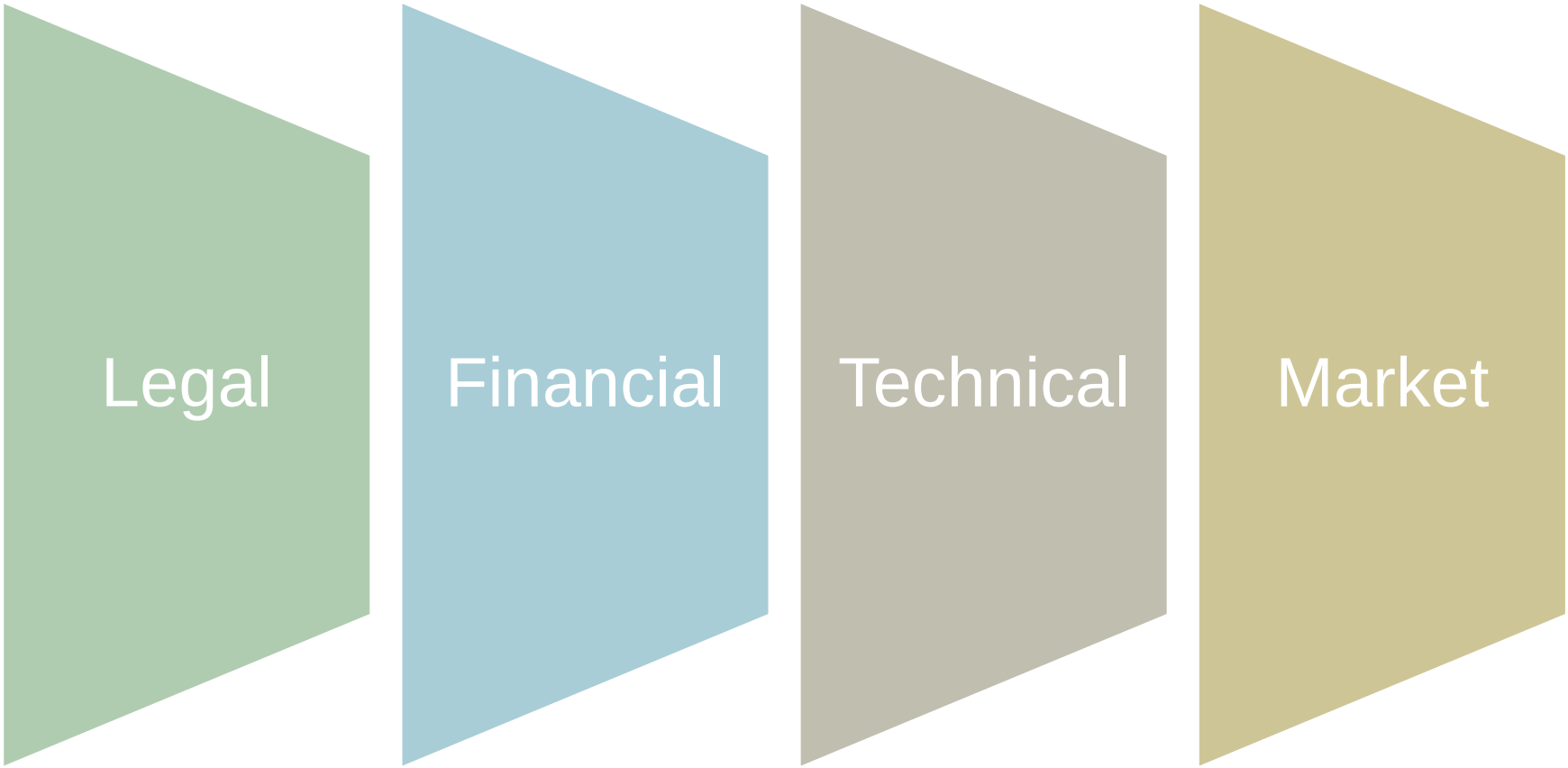
- **Shortcomings of the suggested model:**

Public ESCO – Forfaiting (EPC)



Public ESCO - Forfaiting

- **Barriers for the EPC implementation**



Public ESCO - Forfaiting

- **Barriers for the EPC implementation**

PPP Law

- Private partner can't initiate the procedure
- Very long procedure
- There are no standard documents

Companies lack own capital

- Bank borrowing necessary
- Banks have no knowledge of the EPC specifics

Long Payback Period

- High Risk
- Higher Interest Rate
- Balance Sheet Debt

Public ESCO - Forfaiting

- **Barriers for the EPC implementation**

Underdevelopment of the financial market

- Forfaiting not possible

No multi-year budgeting

- Higher risk for collection of receivables
- Temporary budget illiquidity

Insufficient capitalization of the Fund

- No possibility for new fees
- Lack of grant funds

Public ESCO - Forfaiting

- **Barriers for the EPC implementation**

Underheated buildings

- Lower temperature in buildings
- Lower energy cost then it should be

Lack of information

Public partners lack sufficient capacity

Private partners are not sufficiently informed

Thank you for your attention

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Public ESCO - Forfaiting

PPP Law	• Private partner can't initiate the procedure • Very long procedure • There are no standard documents
Companies lack own capital	• Bank borrowing necessary • Banks have no knowledge of the EPC specifics
Long Payback Period	• High Risk • Higher Interest Rate • Balance Sheet Debt
Underdevelopment of the financial market	• Forfaiting not possible
No multi-year budgeting	• Higher risk for collection of receivables • Budget illiquidity
Insufficient capitalization of the Fund	• No possibility for new fees • Lack of grant funds
Insufficient communication	• Banks have no knowledge of the EPC specifics • Public partners lack sufficient capacity