

FINANCING RENOVATION OF PUBLIC BUILDINGS IN SLOVAKIA

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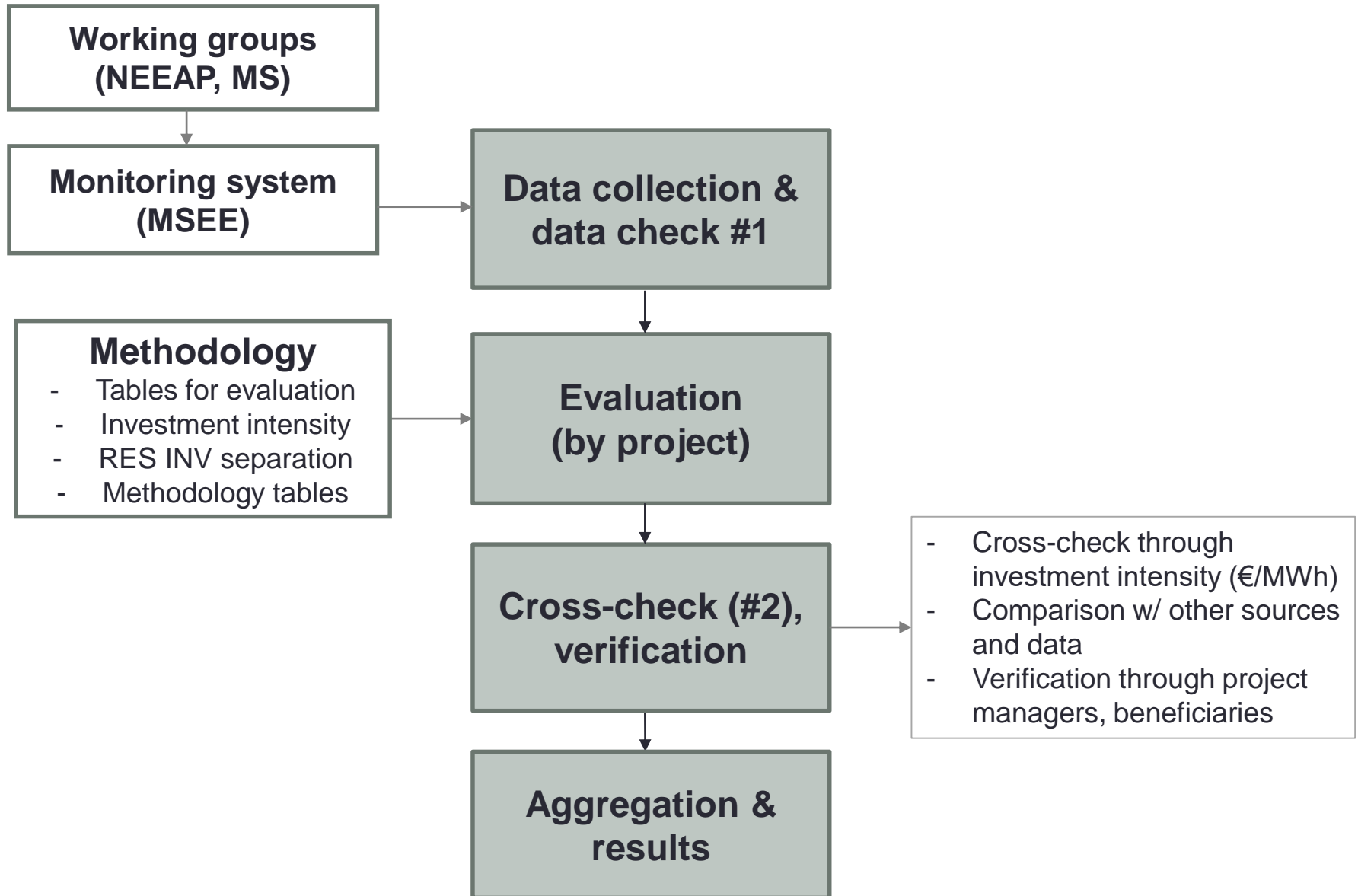
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Eceee 2021, 9 June, 2021

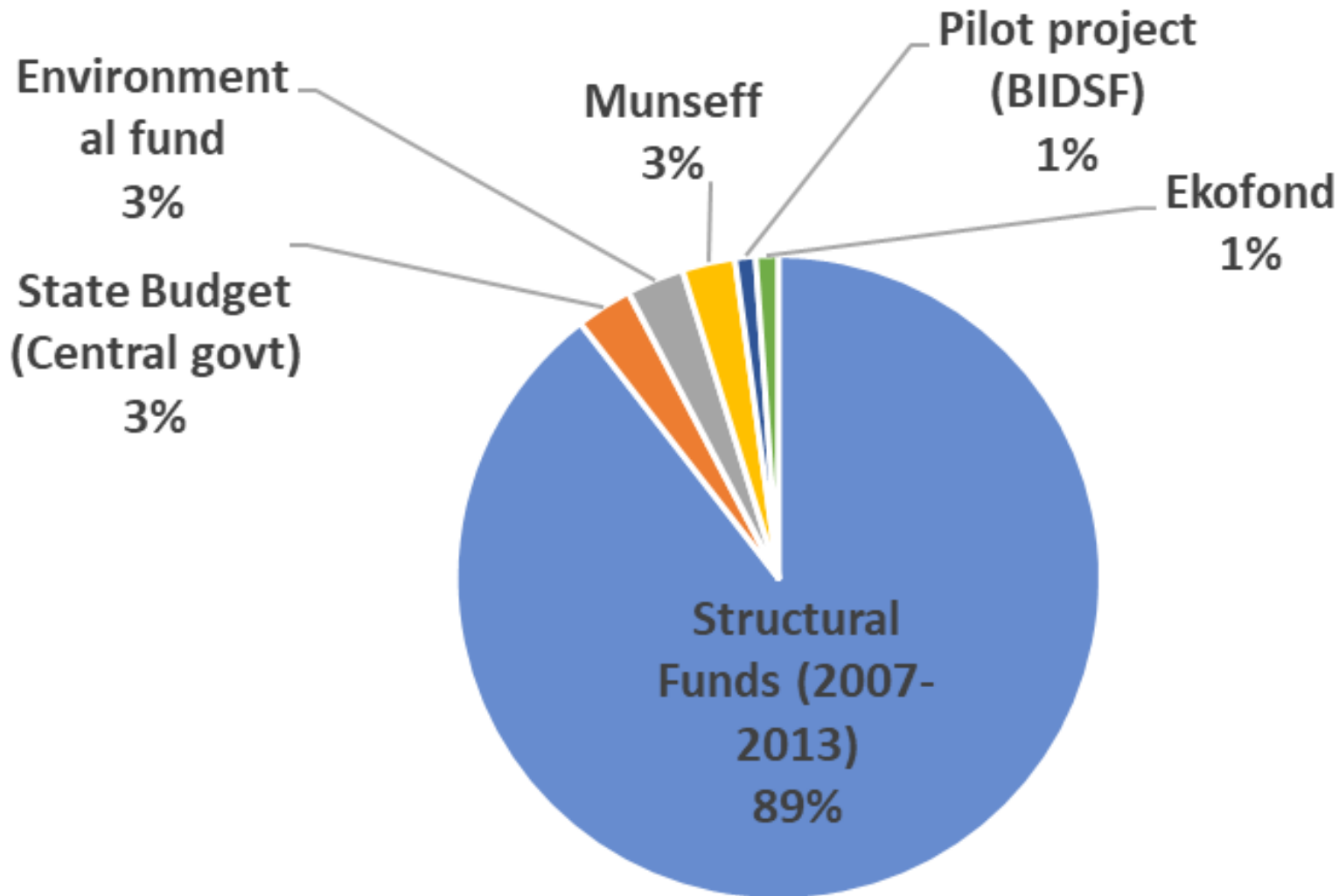
Background

- In Slovakia approx. 12,000 public buildings
- Problem identification:
 1. Despite several programmes, majority need major renovation
 2. Majority of programmes have no ambitious energy requirements
>> lock-in effect (Art. 7 EPBD)
 3. No stable national financial mechanism w/ strict en. requirements
- Aim:
 - To provide overview of financial mechanisms for PB renovation
 - To point out risks & possibilities of large-scale retrofit
 - To summarize lessons learned (SK)
 - To provide examples from abroad
 - Recommendations

Methods



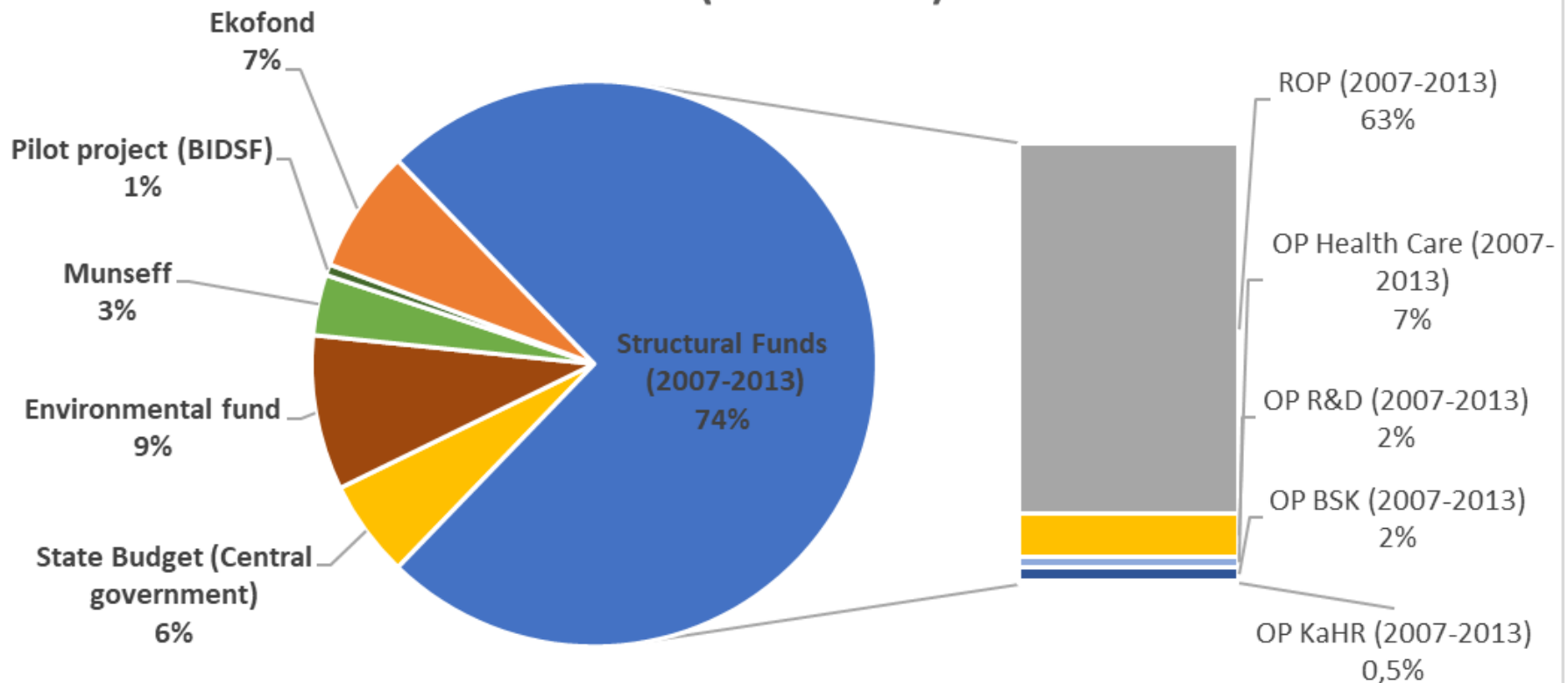
Support programmes 2008-2016 (€)



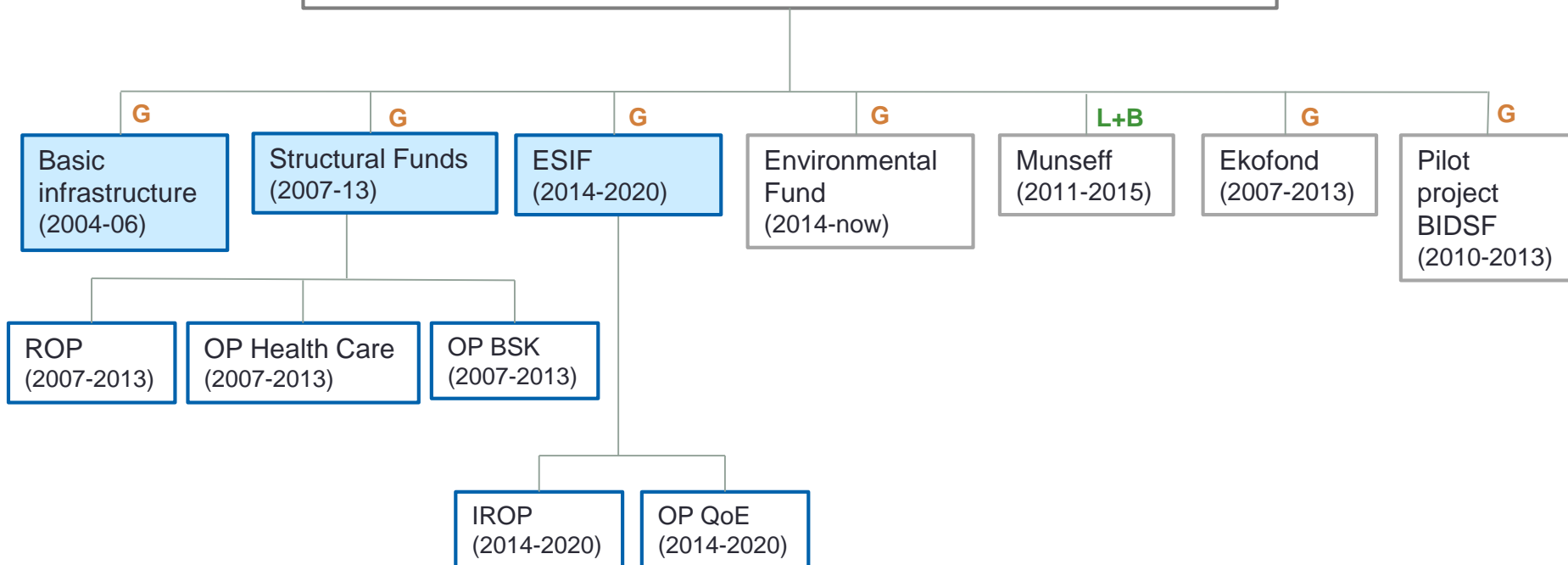
1.01 M€

Support programmes 2008-2016 (PJ)

**Support mechanisms: Energy savings
(2008-2016)**



Support programmes for renovation of PB in SK

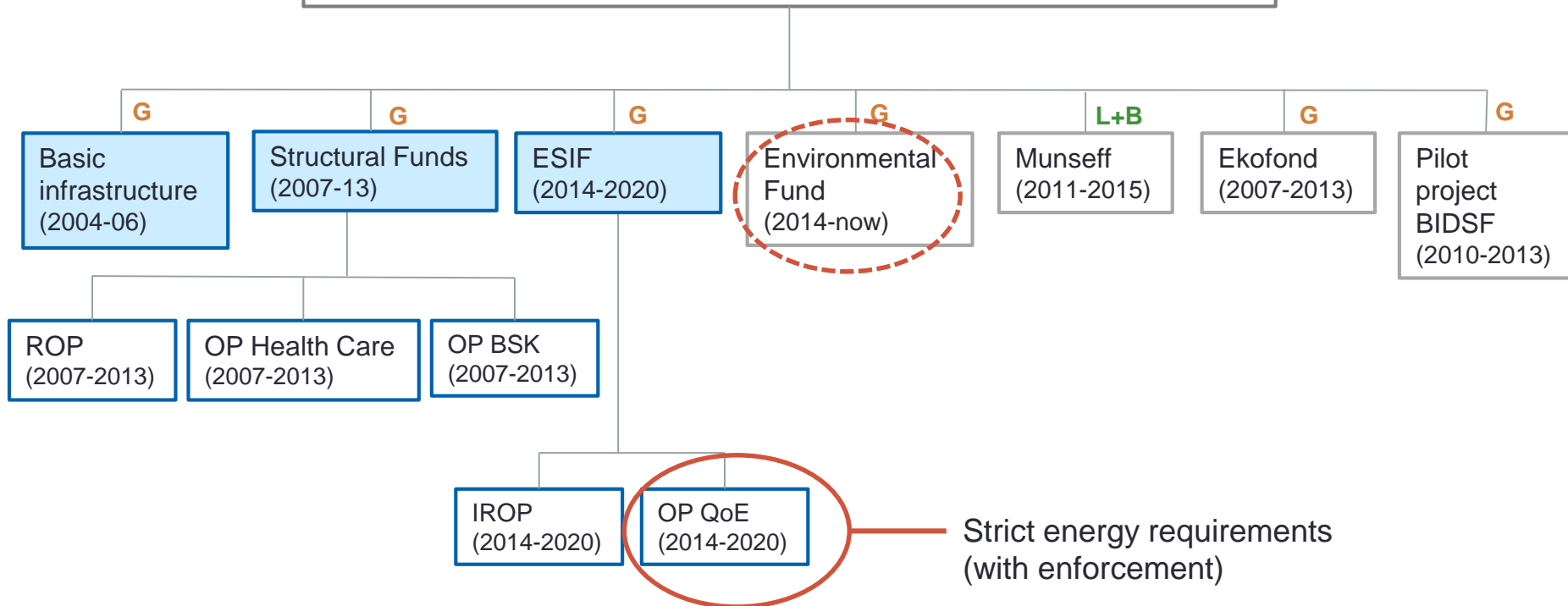


EU Funds

G – grants

L+B – loan + bonus

Support programmes for renovation of PB in SK

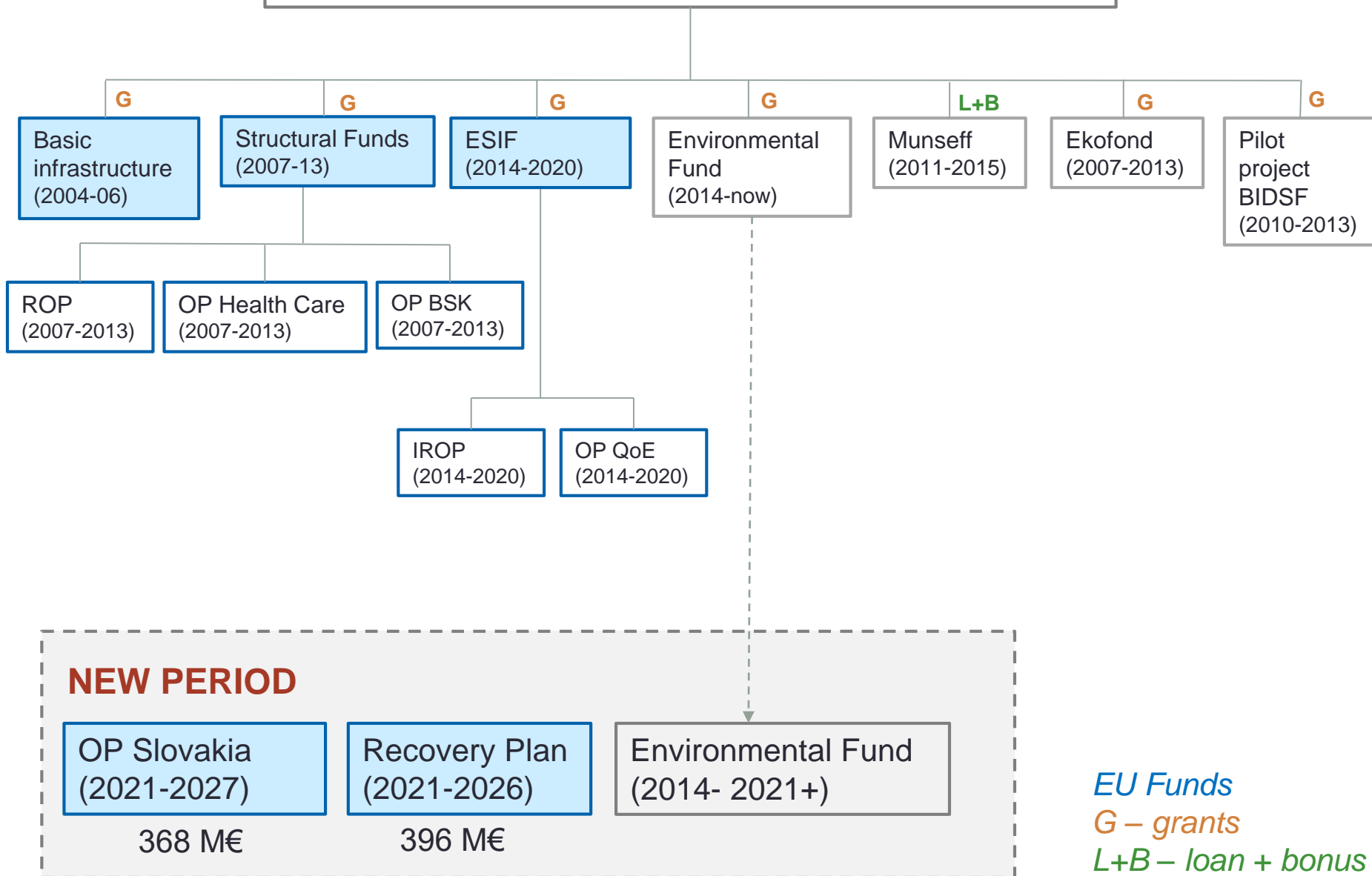


EU Funds

G – grants

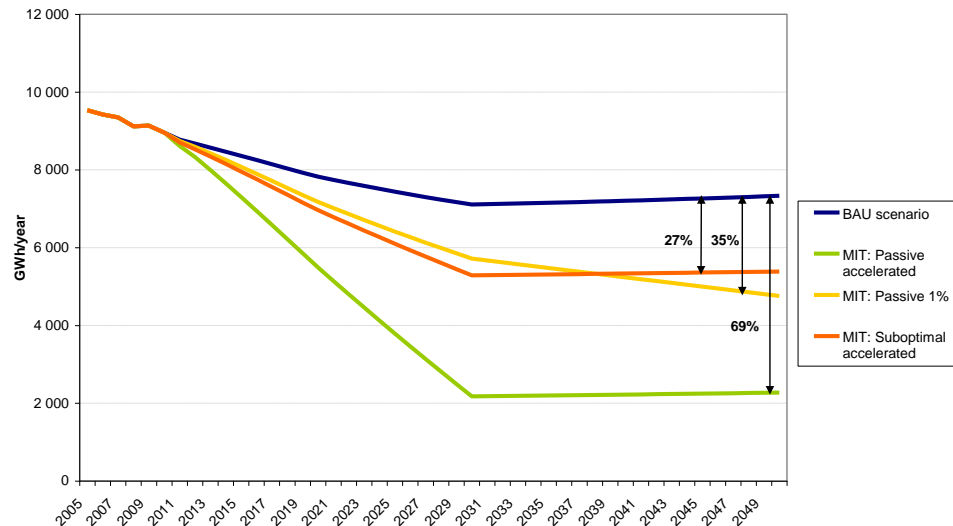
L+B – loan + bonus

Support programmes for renovation of PB in SK

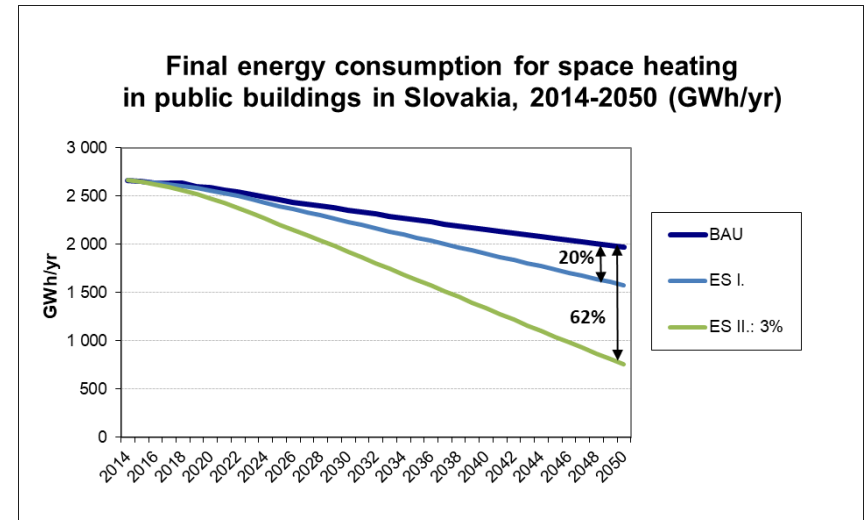


Risks & opportunities of large-scale retrofit

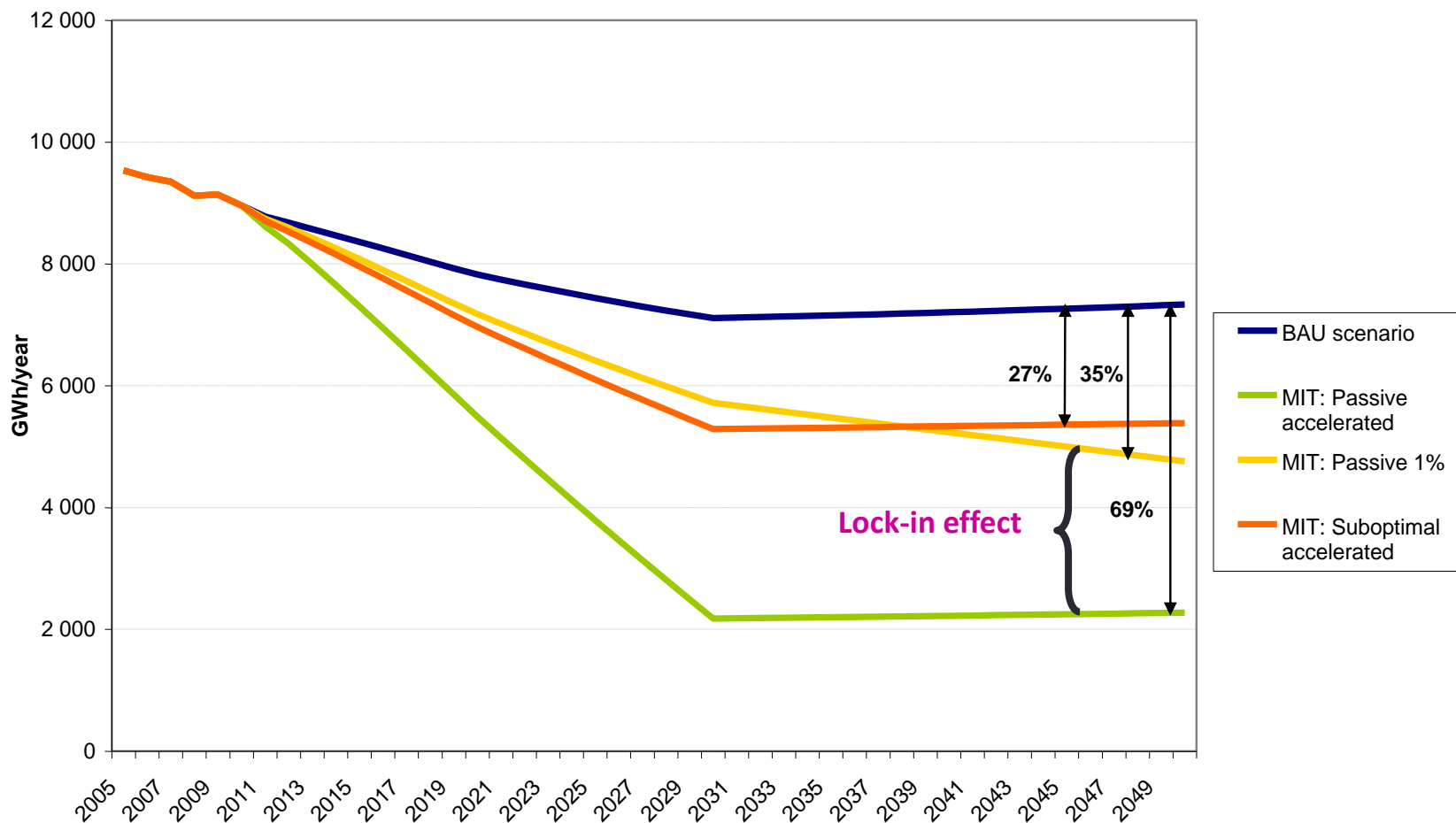
Hungary 2050



Slovakia 2050

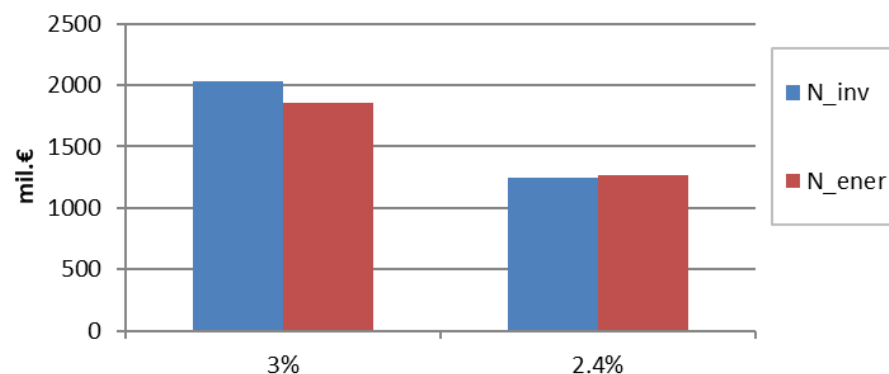


Risks & opportunities of large-scale retrofit (2)

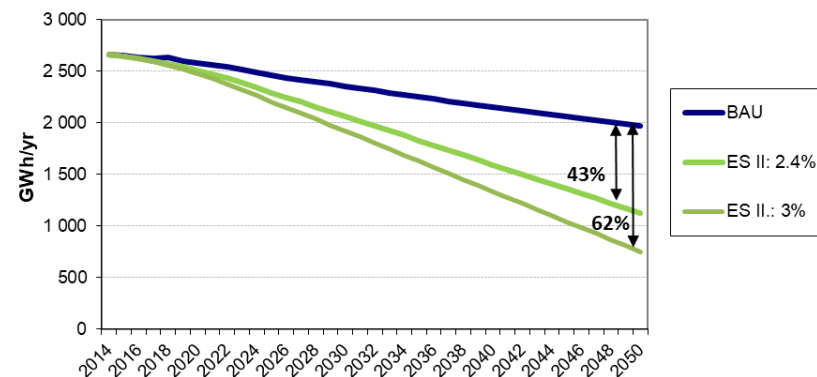


Risks & opportunities of large-scale retrofit (3)

Total investment costs and total energy cost savings up to 2050, ES II. (mil. €)



Final energy consumption for space heating in public buildings in Slovakia, 2014-2050 (GWh/yr)



The often promoted 3% annual retrofit rate is less cost effective than lower rates.

Lessons learned (1)

- From functioning of support programmes (SP):
 - Majority of SP did not have **any or weak energy requirements** (except for OP QoE), which may lead to lock-in effect
 - Functional sanction mechanisms (OP QoE)
 - Proved effective: **EA before & after** (Munseff, OP QoE)
 - Support depending on achieved energy savings (Munseff – L&B)
 - Bratislava region (BSK) – not eligible for EU financing (ESIF 2014-20)

Lessons learned (2)

- From evaluation & reporting:
 - Poor data quality
 - Numerical and conversion mistakes
 - Unclear units of reporting
 - Unrealistic energy savings
 - Unclear whether energy savings are annual or cumulative (5ys)
 - Energy savings self-reported by beneficiaries were not checked by energy specialists (EU SF, Environmental Fund)
 - Investment into EE & RES were monitored together

Examples from abroad

KfW (DE)

- Bonus dependent on achieved primary energy demand
- National financial mechanism – different programmes under one roof

OP Environment (CZ)

- Enabled renovation of PB into PHS (ventilation with heat recovery)
- Admin: State Fund for Bldg Dvlmt – different programmes under one roof

Éco énergie tertiaire - French legislation on energy use reduction in **NR bldgs (FR)**

- Obligation: to reduce energy consumption by certain % per decade (2030, 2040, 2050)
- Or to achieve required energy consumption threshold per decade
- Sanction: fines, Name & Shame

MEES - Minimum EE Standard for rented property **(UK)**

- Bldgs in energy class F, G cannot be rented unless renovated (R, NR)
- As of 2030 also class E
- Sanctions: up to £5,000

London plan 2021 (UK)

- All major developments must be NET ZERO-CARBON
- Monitoring of energy use min. 5 ys after construction
- London's target: carbon neutral by 2050

Hungarian Act on Energy Efficiency (HU)

- Since 2015 all renovations receiving public funding must fulfil cost-optimal energy requirements
- Sanctions: return of the funding
- But: Enforcement currently very weak

Recommendations

- A national financial mechanism for PBs renovation with strict energy requirements & effective sanction mechanism
 - Only once the ambitious energy requirements are in place, retrofit rate can be increased
 - With a long-term vision towards EE & CC targets
 - One institution, several financial sources
- Support only integrated EPC
- EA before & after
- Monitoring of energy savings 3-5 years after renovation
- Monitoring and evaluation of energy savings to be done by energy specialists (in-house or outsourced)
- To monitor finances for EE measures and RES separately
- Municipalities – inventory of buildings, investment priorities, long-term investment strategy for renovation, energy criteria in public procurement

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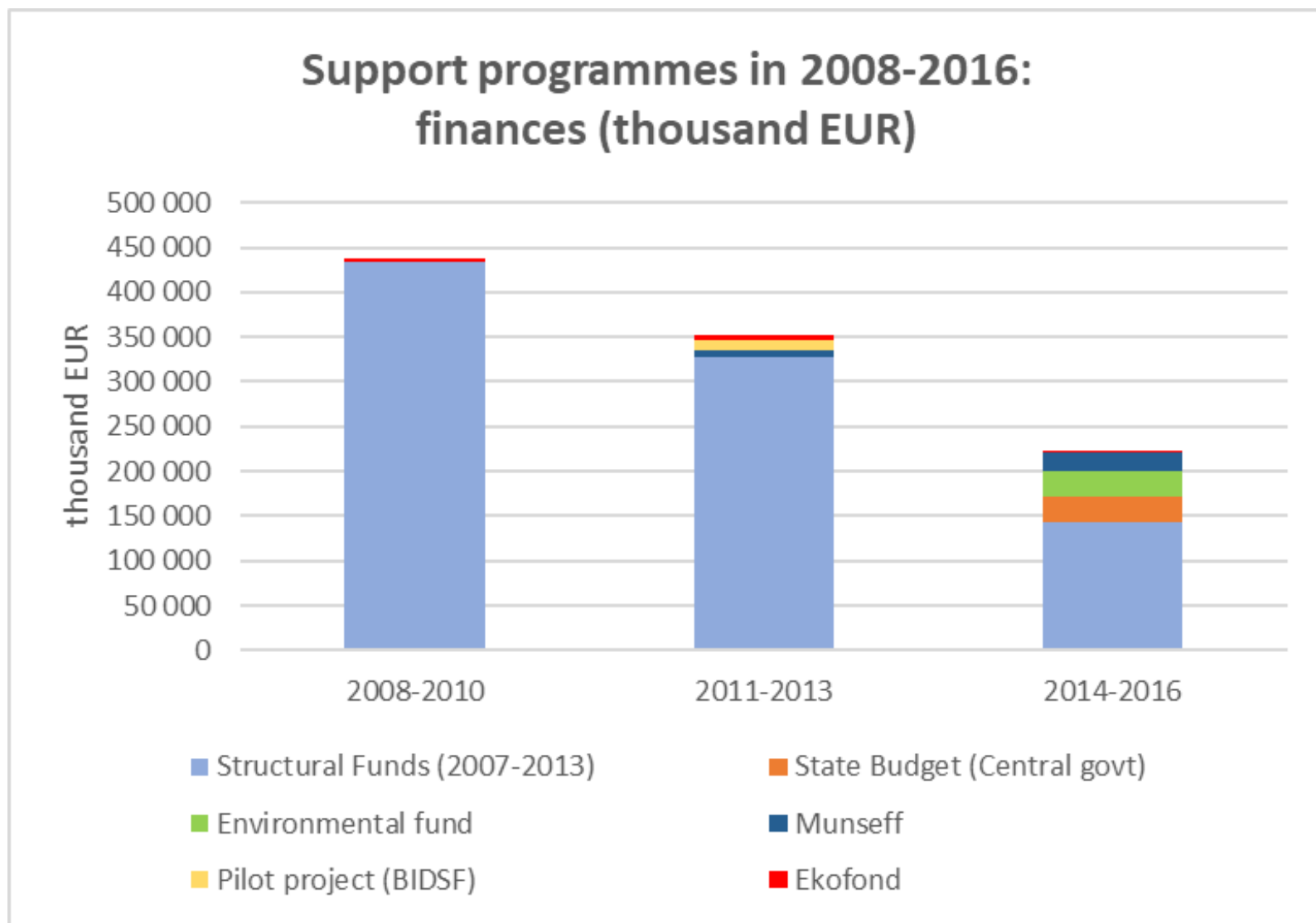
Back-up slides

Conclusions

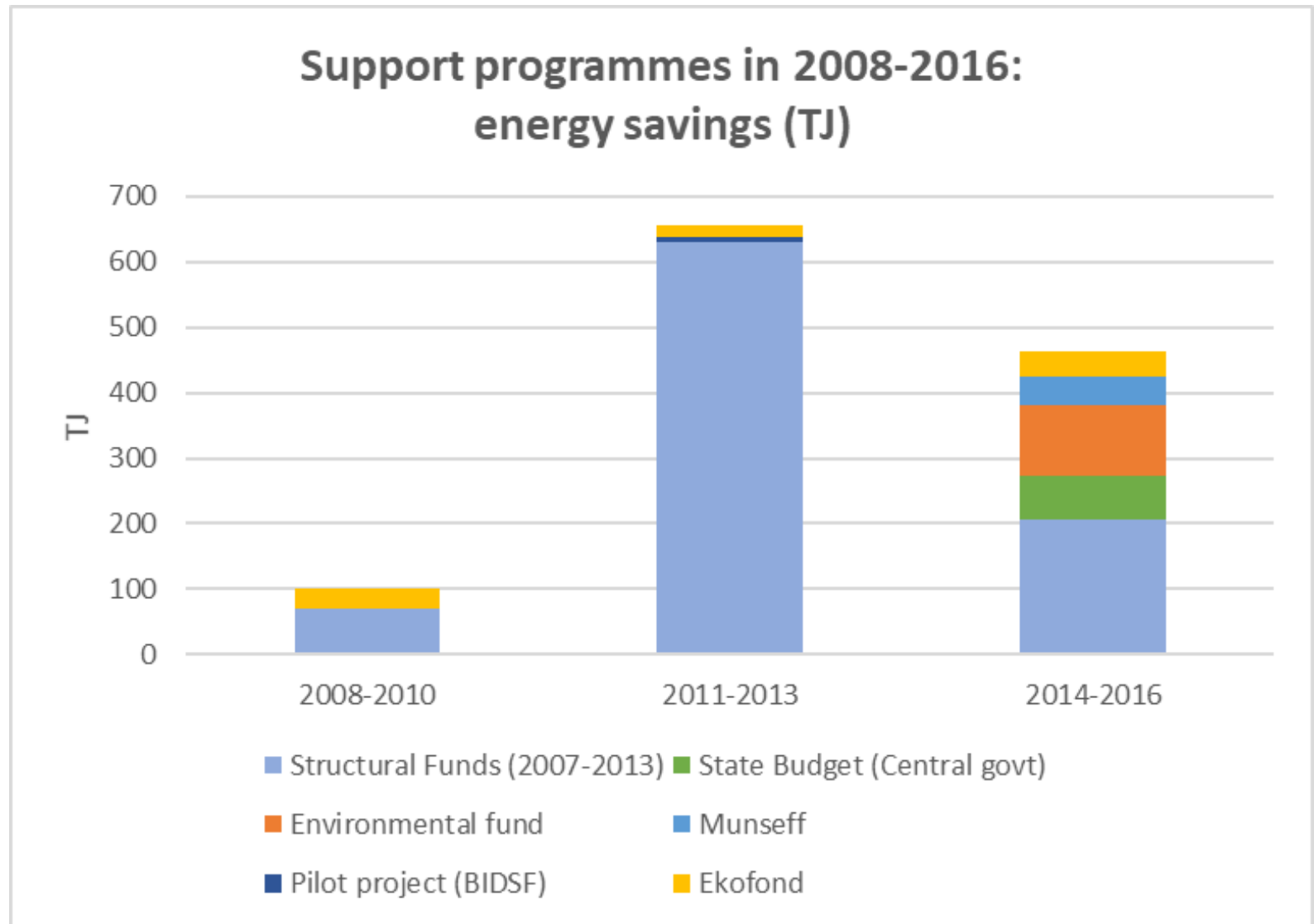
- PBs provide significant energy savings potential
- Currently not used fully:
 - Several ad-hoc support programmes w/out significant impact
 - No strict energy requirements >> lock-in effect
 - No stable & motivational environment for deep retrofit
- Therefore:
 - A framework national financial mechanism with strict energy requirements and effective enforcement mechanism
 - Once strong energy requirements in place, the speed of renovation can be increased (prevention of lock-in effect)
 - One institution, several financial sources
 - With a long-term vision towards EE & CC targets

Support programmes (1)

1.01 M€



Support programmes (2)



Problem identification

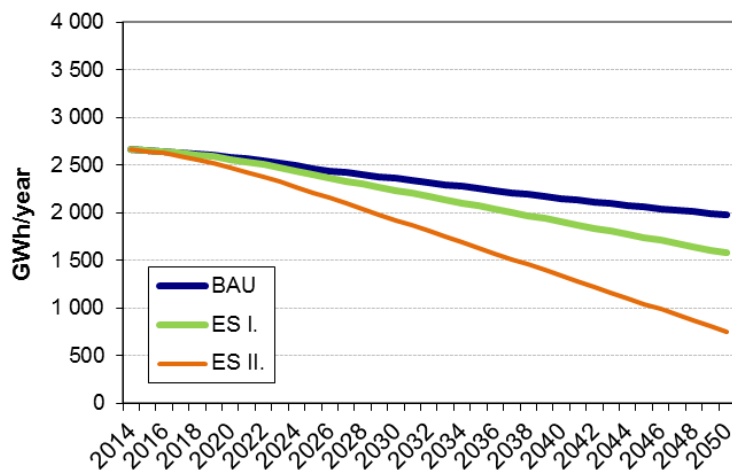
- #1: Despite several programmes (for PB renovation), majority of PBs still require complex renovation
- #2: Majority of programmes have not set ambitious enough energy requirements >> lock-in effect
 - (e.g. in HU: 2/3 of energy savings potential).
- #3: There is no stable financial mechanism in SK for renovation of PBs with strict energy requirements
 - Unlike for residential buildings - SFBD
 - Environmental Fund – since 2014, but no strict en.requirement

Examples from abroad

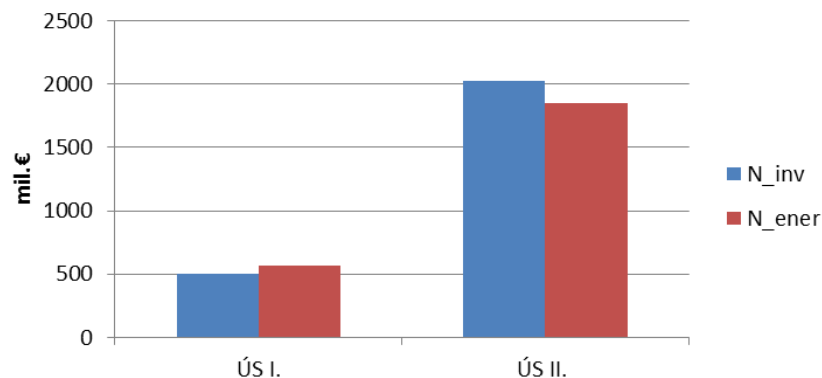
- KfW (DE):
 - % of bonus dependent on achieved primary energy demand
 - National financial mechanism – different programmes under one roof
- Renovation of public buildings into PHS – through public procurement
 - E.g. Renovation of Primary Art School in Holice (CZ), Secondary Vocational Construction School in Trenčín (SK) etc.
 - Energy criteria in public procurement (project, renovation works)
- OP Environment (CZ)
 - Supports construction of NEW public buildings in PHS, and enables RENOVATION of PB into PHS (ventilation with heat recovery)
- London plan 2021 (UK)
 - All major developments must be NET ZERO-CARBON (EE, RES, connection to existing DH, if possible)
 - Plus monitoring of energy consumption min. 5 years after construction
 - London's target: a carbon neutral city by 2050.
- MEES – Minimum EE Standard for rented property (UK)
 - Buildings in energy class F, G cannot be rented and their owners must renovate such buildings (R, NR)
 - As of 2030 the threshold will include also energy class E.
 - Sanctions: up to £5,000
 - Exemption: if costs of renovation > £ 3,500
- Éco énergie tertiaire - French legislation on energy use reduction in NR bldgs (FR):
 - Obligation: To reduce energy use by stipulated % per decade (until 2030, 2040, 2050)
 - Or to achieve required energy consumption threshold defined for each decade (for each building category)
 - Sanction: fines, Name & Shame
- Hungarian Act on Energy Efficiency (HU)
 - Since 2015 all renovations receiving public funding must fulfil cost-optimal energy requirements.
 - Sanctions: return of the funding
 - However: Enforcement currently very weak

Risks & opportunities of large-scale retrofit (2)

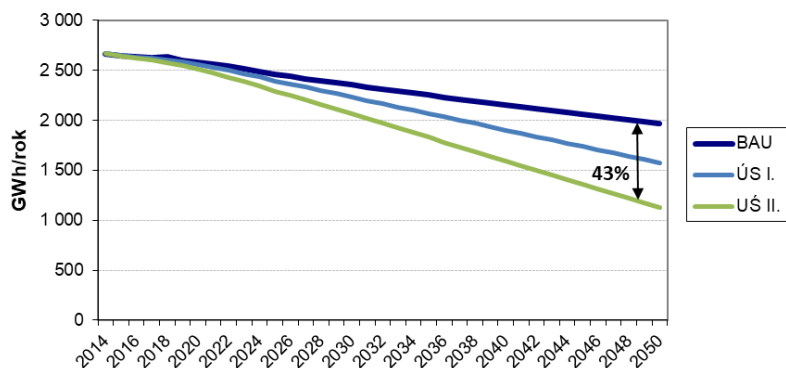
Final energy consumption for space heating in public buildings, BAU vs. US I., 2014-2050 (GWh/year)



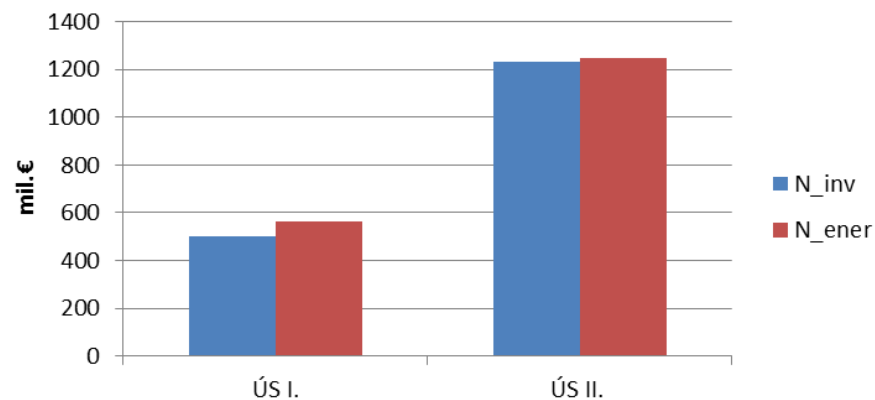
Total investment costs and energy cost savings up to 2050 (mil.€)



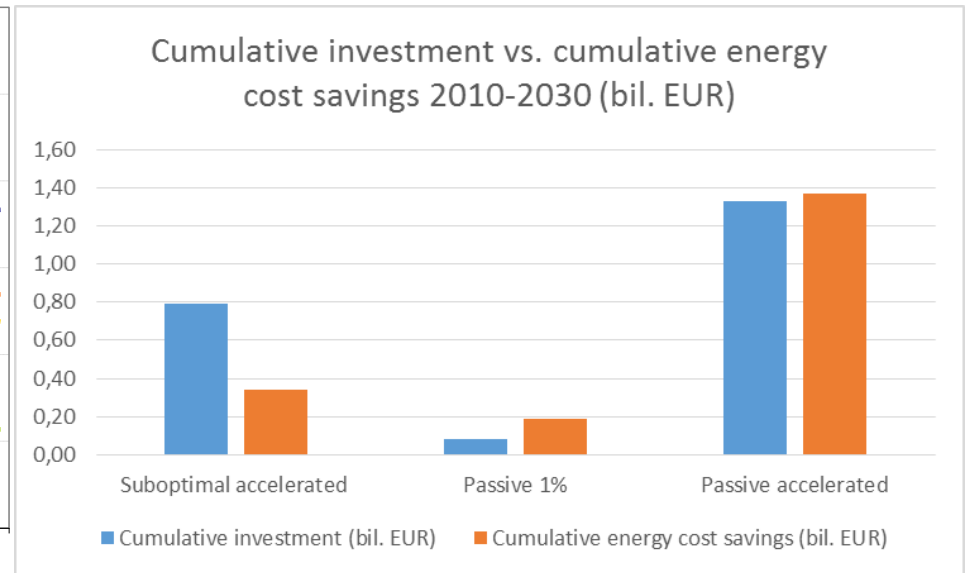
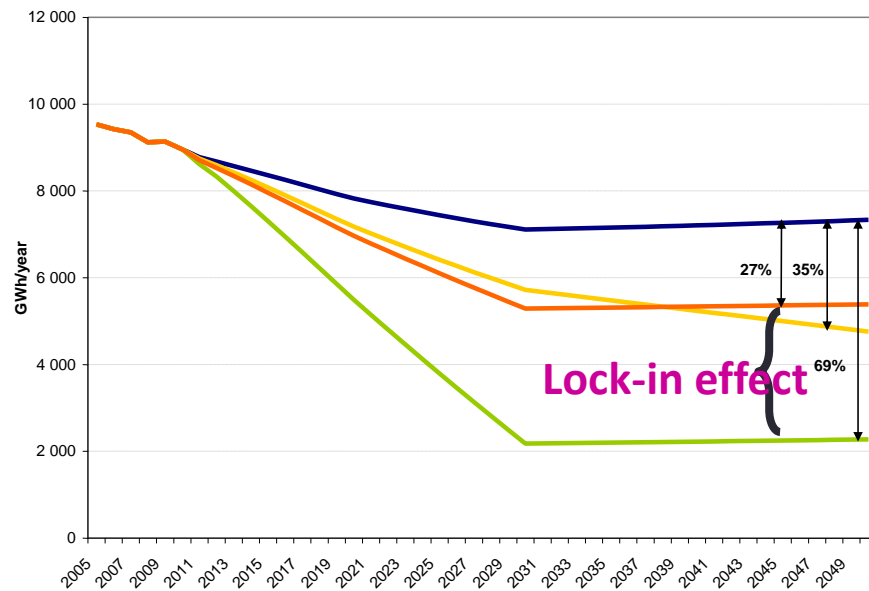
Konečná energetická spotreba na vykurovanie vo verejných budovách, 2014-2050 (GWh/rok)



Total investment costs and energy cost savings up to 2050 (mil.€)

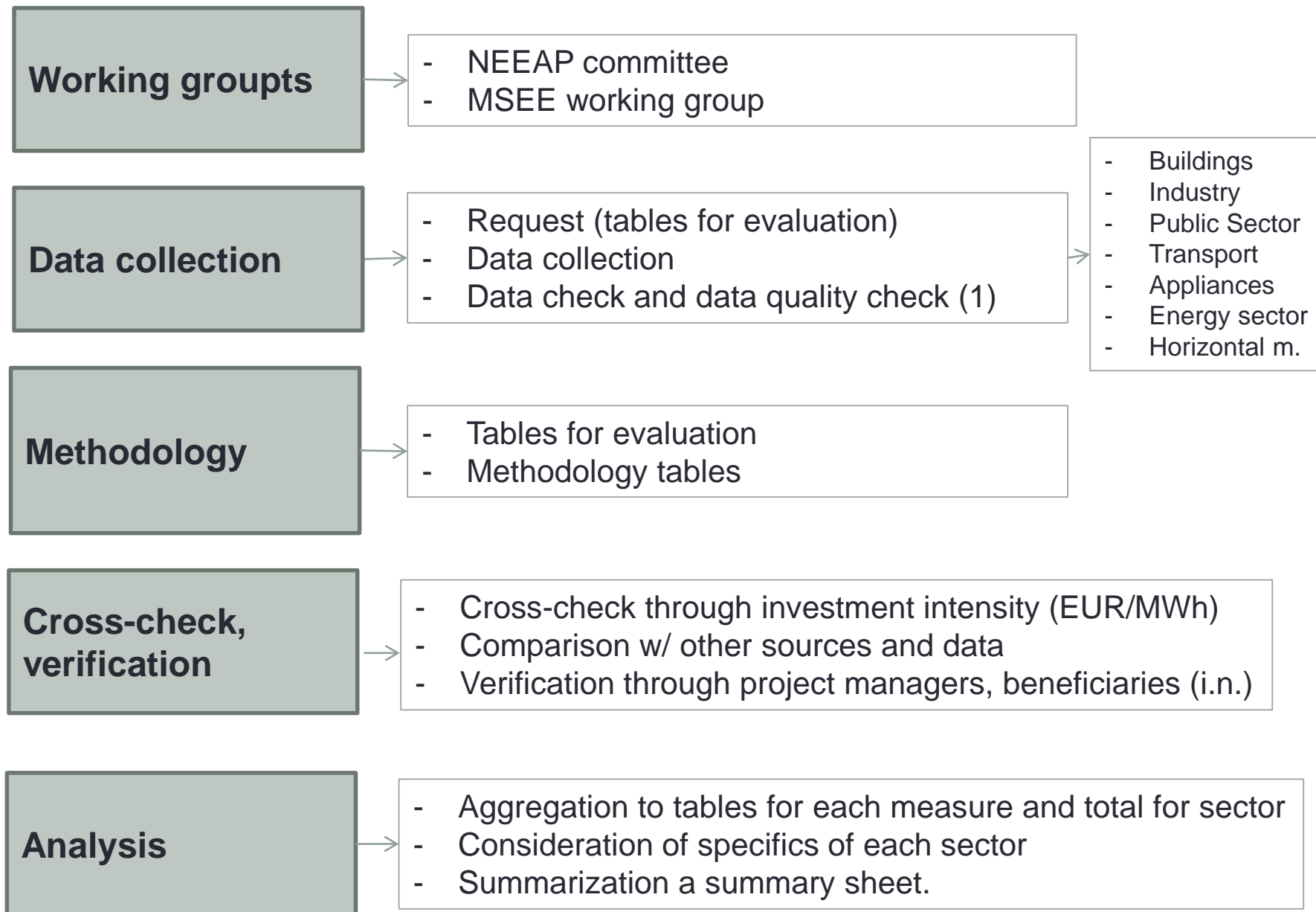


Energy savings potential in Hungarian PB



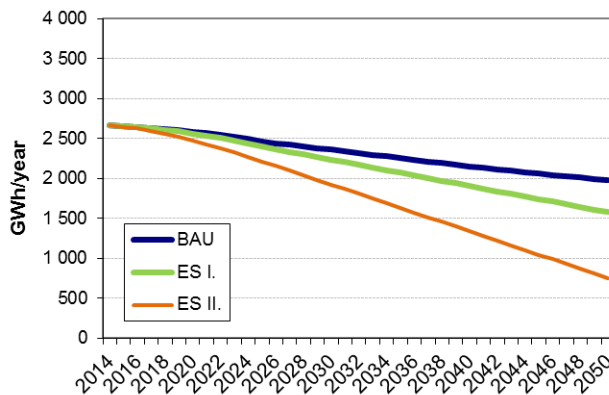
Source: Korytarova (2010)

Preparation of NEEAPs, ARs

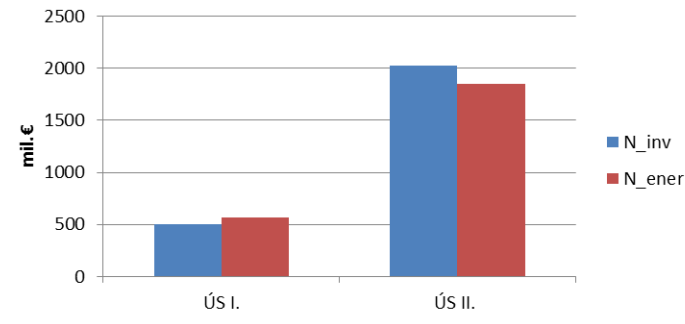


SK Energy savings: 2050

Final energy consumption for space heating in public buildings, BAU vs. ÚS I., 2014-2050 (GWh/year)



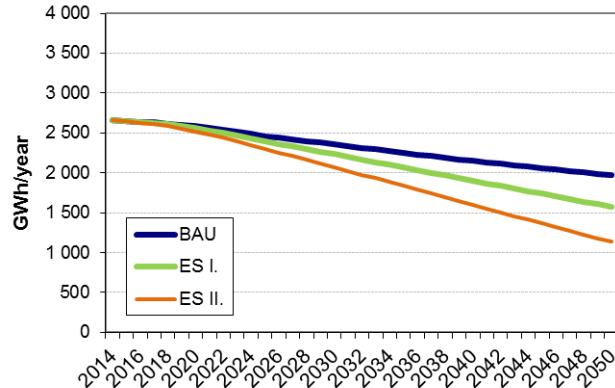
Total investment costs and energy cost savings up to 2050 (mil.€)



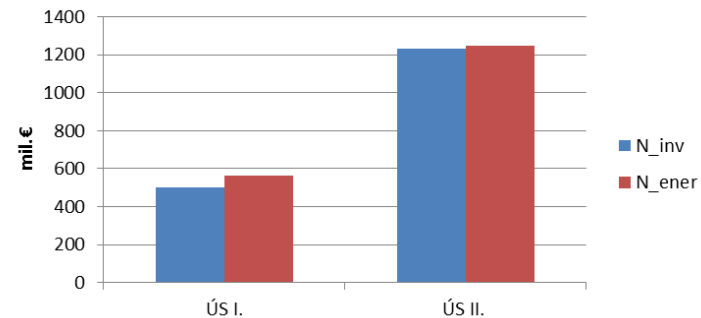
- By 2050 the energy cost savings exceeded the investment costs only in ES I.
- This implied that the assumed retrofit rate of 3% is too costly.

SK Energy savings: 2050 (2)

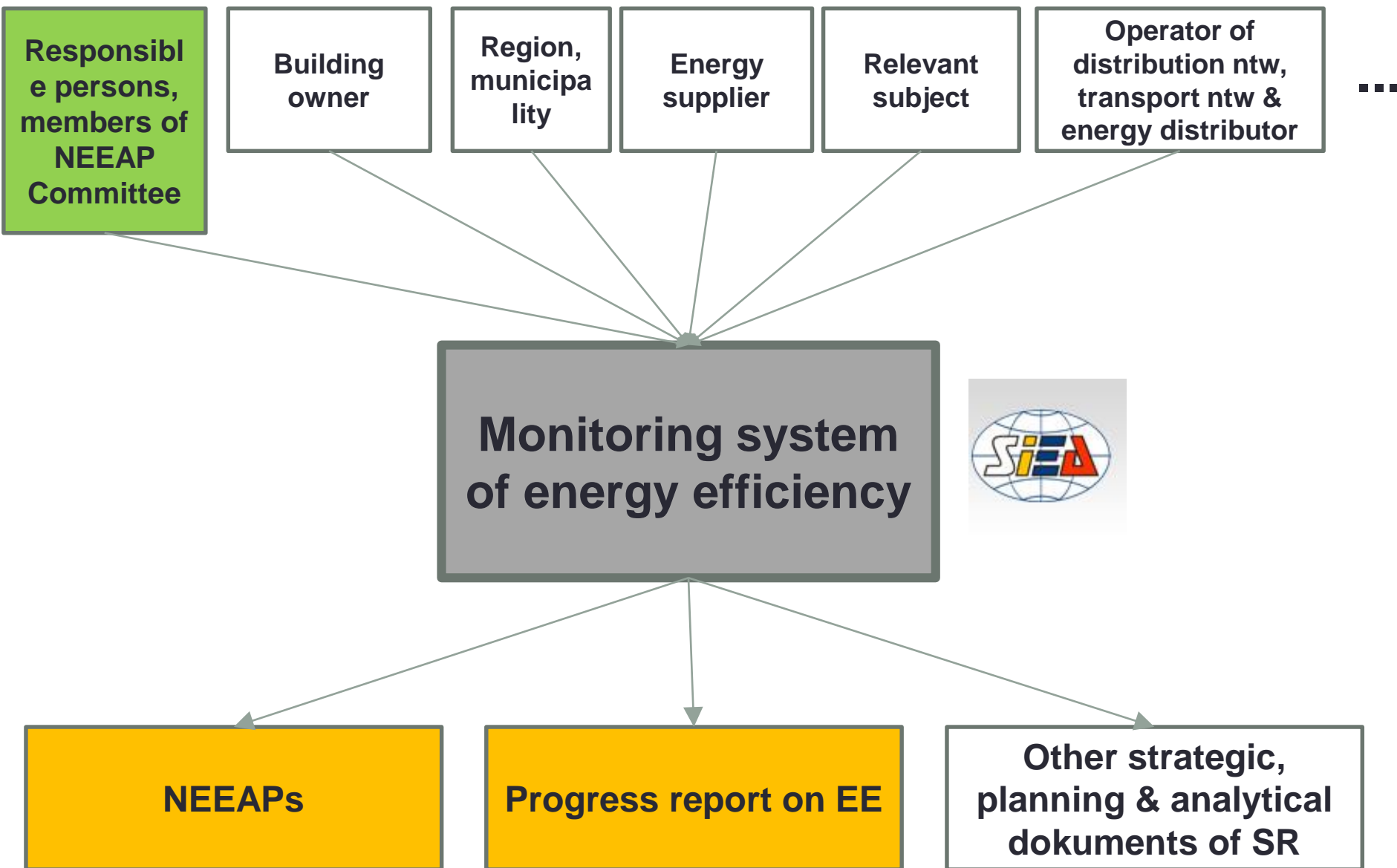
Final energy consumption for space heating in public buildings, BAU vs. US I., 2014-2050 (GWh/year)



Total investment costs and energy cost savings up to 2050 (mil.€)



- Further research searched for the cost-effective level of retrofit rates.



Energy efficiency targets: SK

Target	Original		Adjusted	
ESD targets	% FEC ₂₀₀₁₋₂₀₀₅	[TJ]	% FEC ₂₀₀₁₋₂₀₀₅	[TJ]
Annual target	1%	4 135	1%	3 122
Mid-term target - until 2010	3%	12 405	3%	9 366
Long-term target – until 2016	9%	37 215	9%	28 098

Energy efficiency targets: SK

- ESD - 2006/32/ES:
- 3-year target for 2008-2010: **8 362 TJ**
- Total EE target until 2016: **28 098 TJ**

- EED - 2012/27/EU (Art. 7):
- 3-year target for 2014-2016: **10 247 TJ**
- Total EE target until 2020: **79 695 TJ**
(cumulative)
- **EC requirement: min. 30% of EE target to be measured through BU approach**

