

# **Croatian experience in designing and financing multiapartment buildings (MAB) renovation programme**

- link with EEOS -

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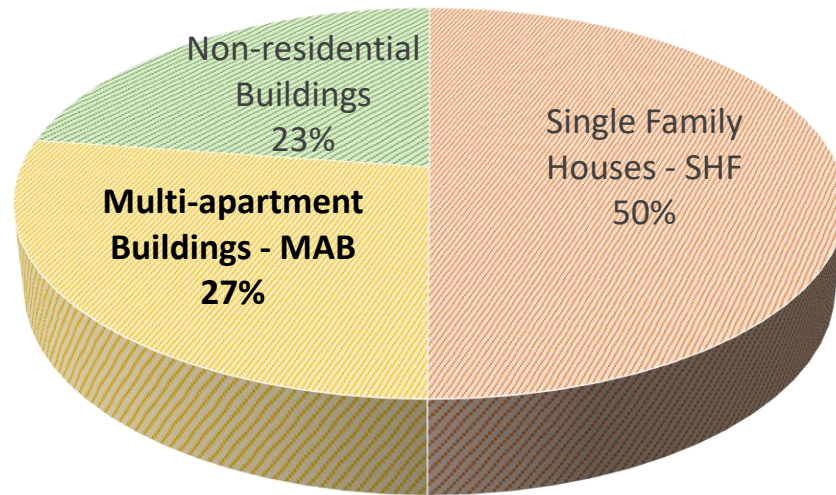
Workshop on Renovation of Multi-Apartment Buildings, Energy  
Community

on-line, 24<sup>th</sup> June 2021

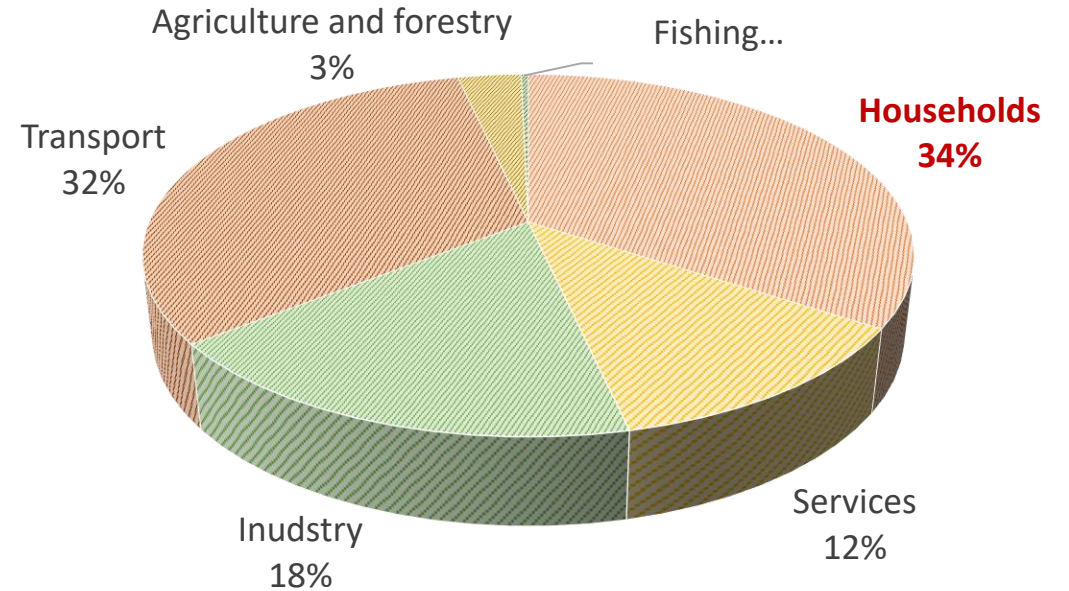
- Introduction
  - Programme for energy renovation of MAB 2014-2020
    - Main features of the Programme
    - Results and lessons learned
  - Programme for energy renovation of MAB 2021-2030
    - Targets as per Long-term Strategy for renovation of building stock targets
    - Challenges
  - Link with EEOS
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# Why focusing on residential sector?

CROATIAN BUILDING STOCK (HEATED AREA)



FINAL ENERGY CONSUMPTION



	Heated area [m2]
Single Family Houses - SHF	83.481.377
<b>Multi-apartment Buildings - MAB</b>	<b>45.449.582</b>
Non-residential Buildings	37.811.064
<b>TOTAL</b>	<b>166.742.023</b>

# Characteristics of Croatian residential sector and MAB



Construction period	$Q_{H,nd}$ [kWh/ m <sup>2</sup> ]			
	Single-family houses		Multi-apartment buildings	
	Continental	Coastal	Continental	Coastal
>1945	176	127	161	99
1945-1960	258	134	158	104
1961-1970	216	122	135	93
1971-1980	196	94	124	93
1981-1990	155	77	107	80
1991-2000	125	83	86	71
2001-2005	118	69	72	59
2006-2010	86	56	53	46
2011-2019	70	40	62	34

Energy class	A+	A	B	C	D	E	F	G	Worst performing MAB
MAB	4,89%	20,70%	29,30%	21,40%	15,28%	5,80%	2,03%	0,60%	
Continental	1,07%	11,50%	31,54%	22,02%	20,53%	9,00%	3,37%	0,97%	34%
Coastal	10,29%	33,70%	21,14%	20,52%	7,87%	1,28%	0,13%	0,08%	30%

# How to make residential sector more energy efficient? Croatian approach...

- **Government programmes** for energy renovation of residential buildings adopted in 2014
- **Public financing** ensured from national EE Fund from 40 to 80% of eligible costs (2014-2016) and 60% from EU funds (2017)



## Single family houses

- Contracted approx. 15.500 projects – approved grants > 659,5 million HRK (88 million €)
- **Completed approx. 12.800 projects** – paid grants > 597,7 million HRK (80 million €)



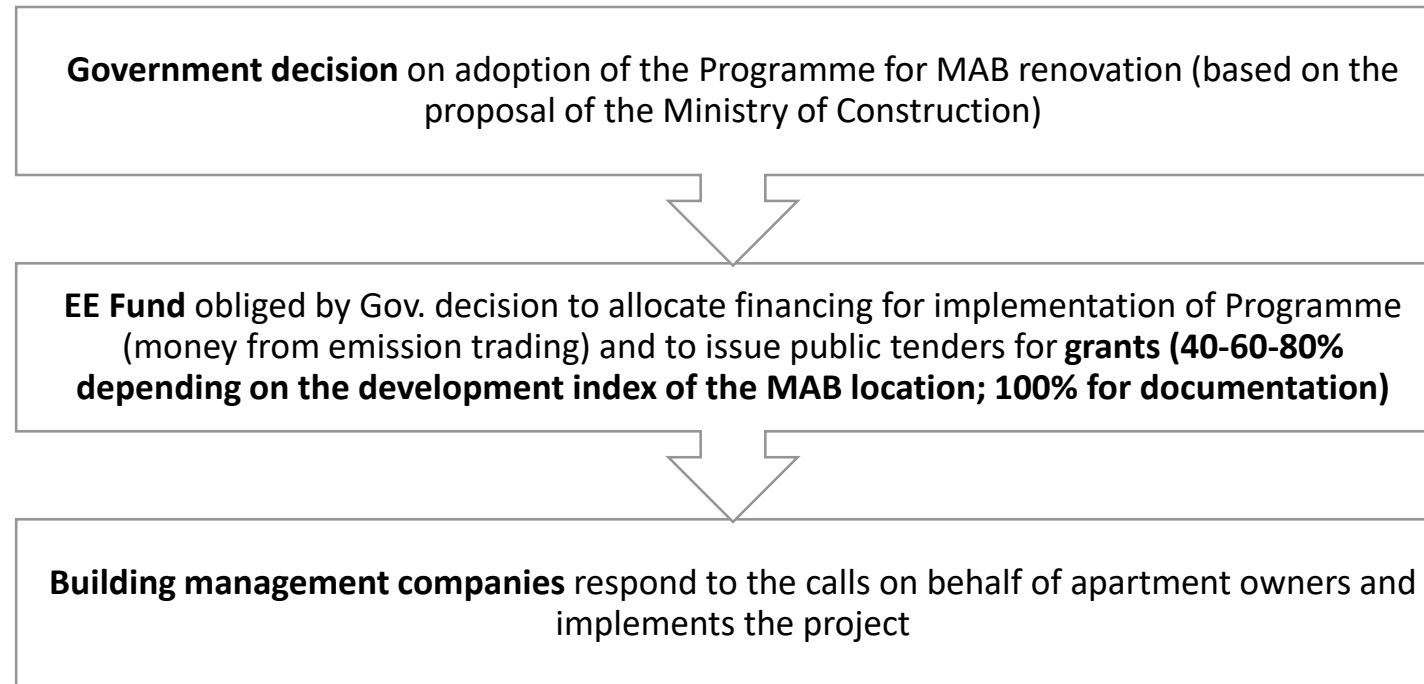
## Multi-apartment buildings

- Contracted approx. 2.300 projects – approved grants > 279 million HRK (37 million €)
- **Completed approx. 2.000 projects** – paid grants > 154 million HRK (20,5 million €)
- **EU financing (ERDF) with 60% grants – approx. 600 projects approved for financing**

# Croatian MAB renovation programme – national funding 2014-2016



## GRANT PROGRAMME - GOVERNMENT



Banking sector offers commercial loans for MAB renovation

**COMMERCIAL LOANS**  
**- MARKET**

# Croatian MAB renovation programme – EU funding 2017-2020



## GRANT PROGRAMME - GOVERNMENT

**Operational Programme „Competitiveness and Cohesion 2014 -2020”** for use of ERDF (70 M€)

**Management Authority** – Ministry of Regional Development and EU funds approves public calls and controls alignment with Operational Programme and administrative procedure

**Intermediate body level 1 – Ministry of Construction** defines eligibility and selection criteria and publishes the public call, signs the contracts and makes payments to MABs (**grant 60% for energy renovation, 85% for documentation and project management**) &

**Intermediate body level 2 – EE fund** administers the public call (checking eligibility and selection criteria), proposing decisions, co-signing the contracts, on-site checks and monitoring within 5 years &

**EE fund – EE sector** provides technical assistance to Building Management Companies in application and implementation

**Building management companies** respond to the calls on behalf of apartment owners and implements the project

Banking sector offers  
commercial loans for MAB  
renovation

**COMMERCIAL LOANS  
- MARKET**

# Co-financing energy audits & certificates and project design documentation (until 2016)

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- **Building the project pipeline (2013-2015)**
- One building – one request!
- Estimation of potentials and costs for implementation of EE measures
- Maximal subvention **200.000,00 HRK (35.000,00 HRK if building with one entrance)**
- Energy audit and certificate must be done in accordance with Regulation and prescribed methodology
  - Ministry of Construction performs regular checks of audit reports and energy certificates -> possibility to loose licence if not done according to regulation
- Project design documentation – regulated by the Act on Construction
  - Obligatory calculation of energy savings to prove that 30% (50%) reduction in needed energy for heating of a building is achieved -> **needed energy vs. used energy**
- MAB that received subsidy for project documentation are obligated to renovate the building within 3 years -> **ensuring the proper use of public money**
- **Results:**
  - **1.347** energy audits and certificates
  - **915** project design documentation



# Co-financing energy renovation of buildings (until 2016)

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- One building – one request!
- Maximal subvention **1.400.000,00 HRK**
- Application form – must provide data on calculated energy and emission savings (new, more detailed application form for EU funds purposes)
- One-time payment after works have been completed and documents delivered to the Fund - > **ensuring use of public money for planned purpose!**
  - Contract between the Fund and building management company published with the public call
  - Request for payment in standardised form
  - Final report with all data needed for input in the system for M&V
- EE Fund is entitled to perform on-site controls and to monitor effects of the project (energy savings) up to 5 years
- Results:
  - **430** renovated MAB

# Co-financing energy renovation of MAB with EU funding from ERDF (from 2016)

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- 60% co-financing for energy renovation works and supervision (calculated financing gap)
  - 85% co-financing for energy audits, project documentation, project management
    - Refund of costs for energy audit before renovation and project documentation
  - Minimal subvention 100.000,00 HRK
  - Maximal subvention 13.000.000,00 HRK
  - Min. 50% reduction of heating demand
  - Only one public call in late 2016 – **70 million EUR -> 584 MAB**
  - **Technical assistance by EE Fund** (92% acceptance rate for applications)
  - Results:
    - **542** renovated MABs
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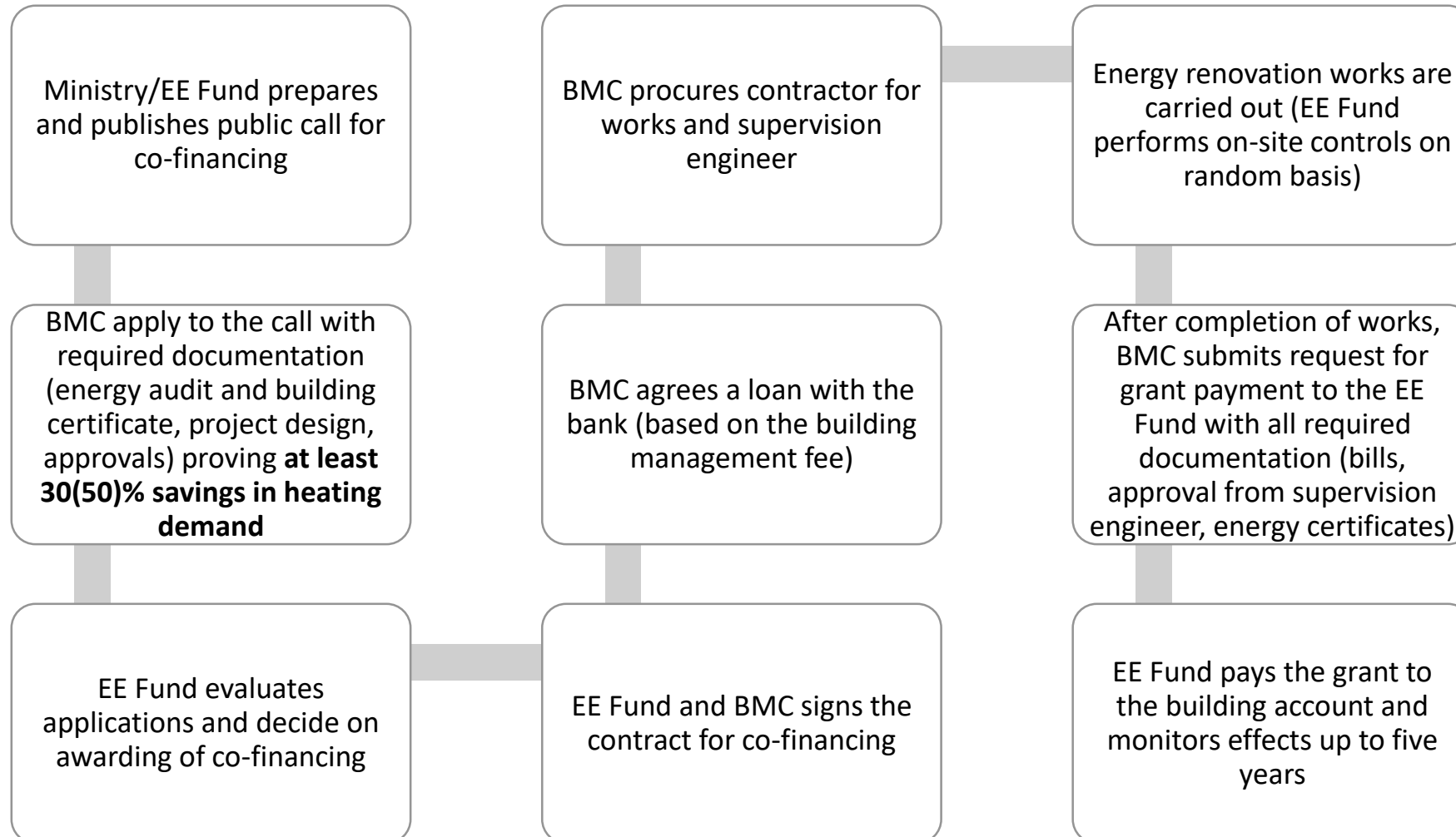
# The role of Building Management Companies

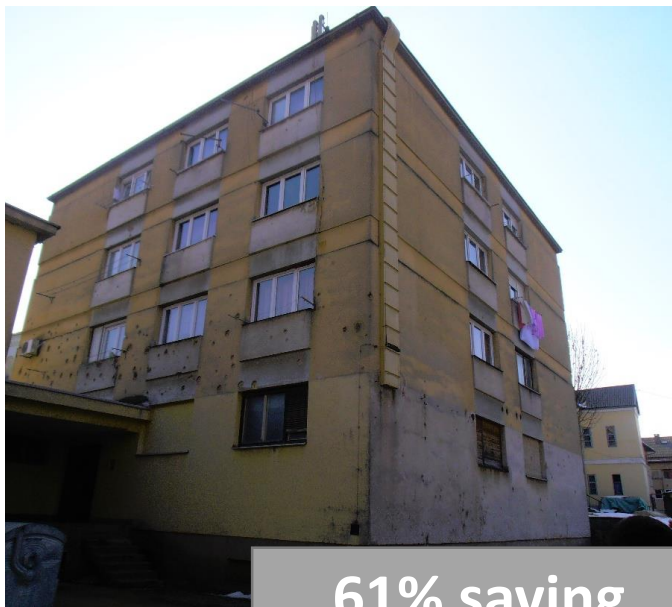
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- Each multi-apartment building in Croatia is obliged by law to contract Building Management Company
    - BMC responsible for maintenance services according to the contract
    - All apartment owners pay a monthly fee for building management – **non-compliance is penalised by enforcement!**
  - BMC recognised by Government programmes as intermediaries between State institutions (Ministry, EE Fund) and apartment owners
    - BMC apply for co-financing on behalf of apartment owners with a proof that **more than 50% of apartment owners** (based on the share in the total surface of the building) agree with the renovation
    - BMC sign the contract for financing
    - BMC selects the contractor for works
    - BMC reports to the EE Fund
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# Procedure for awarding co-financing

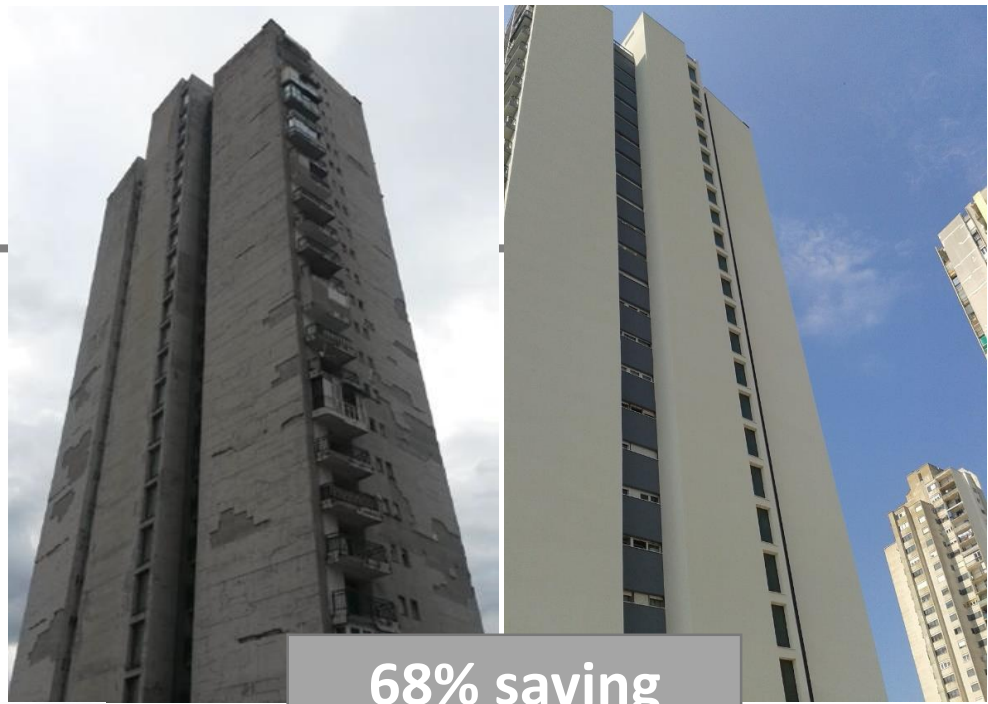




61% saving



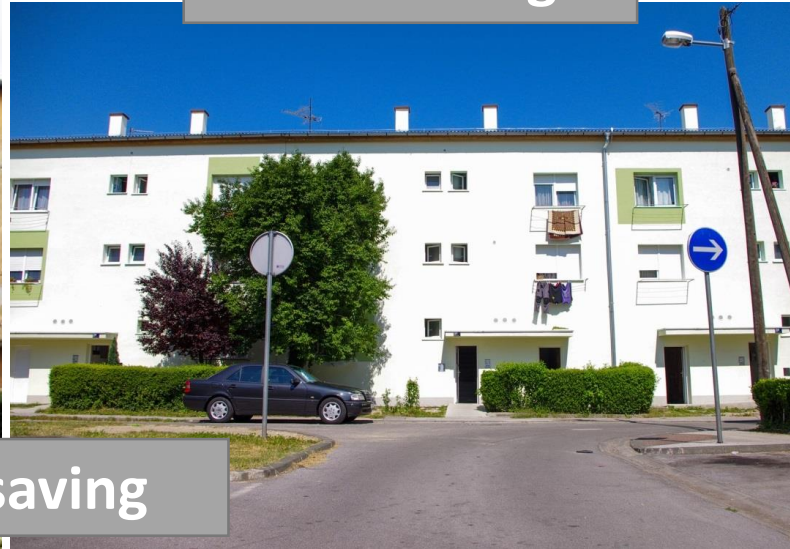
50% saving



68% saving



79% saving



Source: Environmental Protection and Energy Efficiency Fund

# Promotion and awareness raising activities



- Campaign included:

- **Informative leaflets** with information on EEmeasures that can be financed
- **Workshops** with property management companies
- More than **30 events** throughout Croatia (both in 2015 and 2017)
- **Info office** and **toll free line** for citizens
- **One-stop shop** (EE Fund)



### 4 KORAKA PROCESA OBNOVE ZGRADE

#### 1. ENERGETSKI PREGLED I IZRADA ENERGETSKOG CERTIFIKATA ZGRADE

- Sufinanciranje 40%, 60% ili 80% opravdanih troškova\* (ovisno o području na kojem se zgrada nalazi)
- Maksimalan iznos po zahtjevu je 200.000 kn
- Javni poziv otvoren do kraja godine ili do utroška sredstava

#### 2. IZRADA PROJEKTNE DOKUMENTACIJE ZA ENERGETSKU OBNOVU ZGRADE

- Financiranje 100% opravdanih troškova
- Maksimalni iznos je 35.000 kn za zgradu ili u slučaju zajedničke prijave više povezanih zgrada 200.000 kn
- Javni poziv otvoren do kraja godine ili do utroška sredstava

#### 3. ENERGETSKA OBNOVA ZGRADE

- Sufinanciranje 40%, 60% ili 80% opravdanih troškova\* (ovisno o području na kojem se zgrada nalazi)
- Maksimalan iznos po ponudi je 1,4 milijuna kn
- Javni natječaj otvoren do 13. ožujka 2015. godine

#### 4. UGRADNJA UREĐAJA ZA INDIVIDUALNO MJERENJE POTROŠNJE TOPLINSKE ENERGIJE

- Sufinanciranje 40%, 40% ili 80% opravdanih troškova\* (ovisno o području na kojem se zgrada nalazi)
- Maksimalan iznos po ponudi je 2 milijuna kn
- Javni poziv otvoren do kraja godine ili do utroška sredstava

#### 5. ENERGETSKA OBNOVA ZGRADE

- Sufinanciranje 40%, 60% ili 80% opravdanih troškova\* (ovisno o području posebne države skrbni, prve skupine i skupine dijelovi prirode)
- Sufinanciranje od 40% - bristambenstva i područja druge skupine osim od 40% - svi ostali

### Cjelovita obnova višestambenih zgrada omogućava veću ugodnost prostora, značajne uštede na energentima za grijanje te smanjuje emisije CO<sub>2</sub> u atmosferu.

#### ZAŠTO ENERGETSKA OBNOVA?

- Zgrade troše više od 40% ukupne potrošnje energije.
- Većina zgrada u Hrvatskoj može se svrstati u energetski razred E, F ili G.
- Energetskom obnovom je potrošnju energenata moguće smanjiti peterostruko!
- **obnova = veća ugodnost stanovanja = manja potrošnja = manji režijski troškovi**
- Dodatne uštede do 15% se mogu postići pravilnom regulacijom sustava grijanja.

#### KAKO DO SREDSTAVA?

Do sredstava se dolazi prijavom na javne pozive i natječaje Fonda putem tvrtke koja je službeni upravitelj zgrade.

1. Proučite tekst javnog poziva/natječaja i isplanirajte projekt
2. U suradnji sa upraviteljem zgrade pripremite potrebnu dokumentaciju
3. Dokumentaciju pošaljite do navedenog roka prijave
4. S Fondom se potpisuje Ugovor o sufinanciranju, nakon čega počinju radovi
5. U roku 30 dana od dostavljenog izvješća o završenim radovima, isplaćuju se odobrena sredstva

S ciljem obnove što većeg broja zgrada i smanjenja potrošnje energije u kućanstvima, Vlada Republike Hrvatske je 2014. godine donijela Program energetske obnove višestambenih zgrada.

> 50% bruto površine za stanovanje

**VIŠESTAMBENA ZGRADA** minimalno 3 stambene jedinice  
njome upravlja upravitelj

## OBNOVLJENE ZGRADE - VIŠE ŠTEDE, VIŠE VRIJEDE

### PROGRAM ENERGETSKE OBNOVE VIŠESTAMBENIH ZGRADA

Energetska obnova zgrade smanjit će potrošnju energije i vaše režije, povećati vrijednost stana i učiniti ga udobnijim i zdravijim za život.

- UŠTEDA NOVCA
- UŠTEDA ENERGIJE
- UDOBNIJI I ZDRAVIJI ŽIVOT
- VEĆA VRIJEDNOST STANA

Logo: Europa unija Zajedno do bolnove EU

Logo: EUROPSKI STRUKTURNI I INVESTICIJSKI FONDOVI

Logo: Operativni program KONKURENTNOST I KOHEZIJA

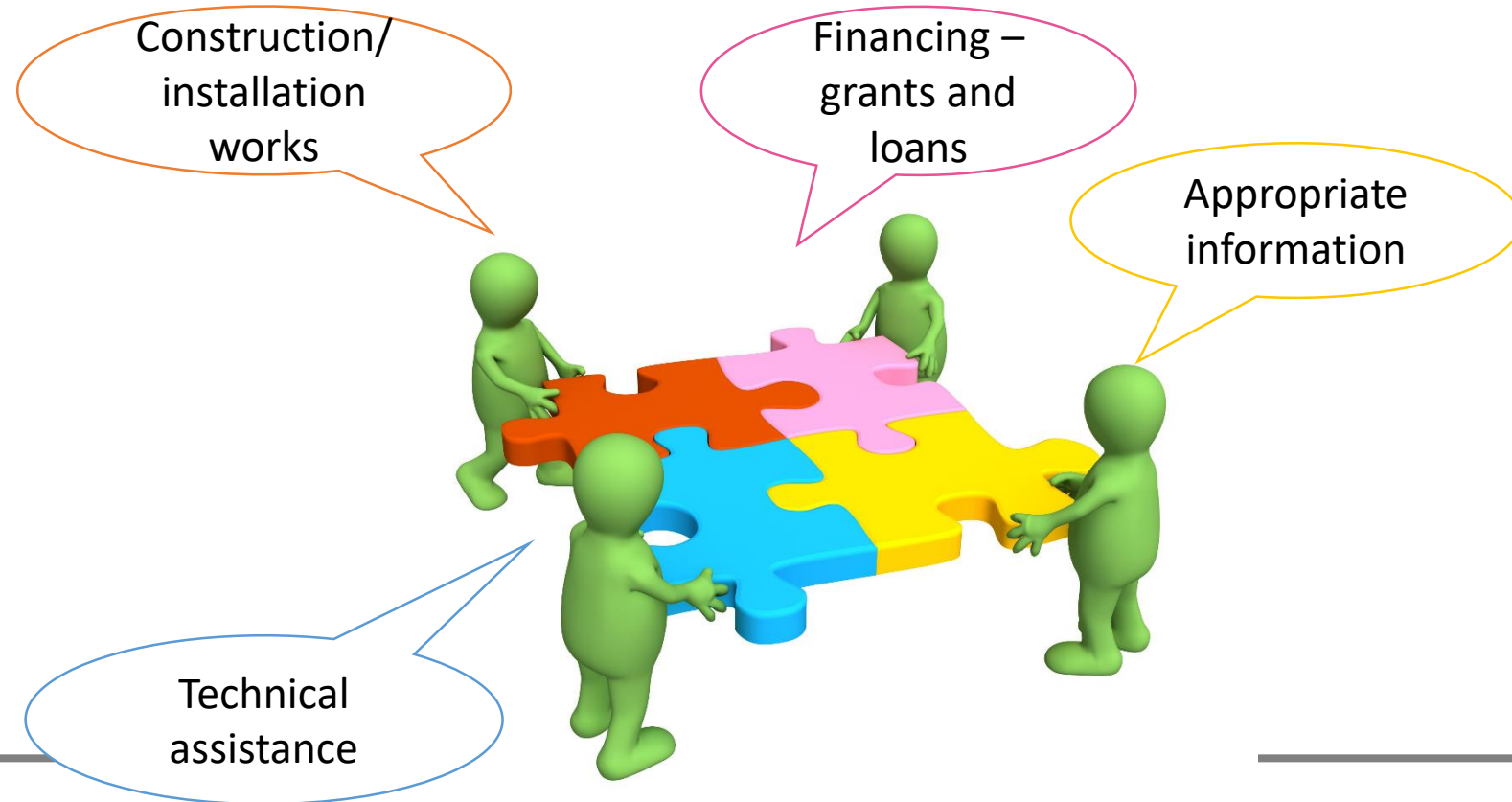
Logo: REPUBLIKA HRVATSKA PROMISLIVOSTI GRADILISTVIA I PROJEKCIJSKA UREDBINA

Logo: FOND ZA ZAŠTITU OKOLIŠA I ENERGETSKU UČINKOVITOST

# Textbook example?

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- Finding the right solution for energy renovation of multi-apartment buildings...



# Achieved vs. expected results 2014-2020



- Achievements:

Year	2014	2015	2016	2017	2018	2019.	2020.
New annual energy saving[PJ]	0,0210	0,2355	0,1825	0,1548	0,1103	0,3190	0,0157
Total annual savings in 2020 [PJ]	1,0388						
Total emission reduction CO <sub>2</sub> [t]	63.465,19						
Cumulative savings 2014-2020 [PJ]	<b>2,9120</b>						
Total investments [HRK]	1.122.436.799,24						
Total subsidies [HRK]	614.284.403,18						

- Targets:

CUMULATIVE TARGET (Art 7. EED) 2014-2020 [PJ]	54,2500
CUMULATIVE TARGET FOR ALTERNATIVE MEASURES [PJ]	27,1830
CUMULATIVE SAVINGS FROM MAB ENERGY RENOVATION PROGRAMME [PJ]	<b>5,1400</b>

- 56,65% of targeted cumulative energy savings for MAB achieved



- Have we done something wrong?
  - Political will - > Government programmes (base for OPCC) -> secured co-financing from national and EU funds
  - Continuous information and awareness raising
  - Administrative procedure – friend or foe?
  - We ran out of money... discontinuity of programme implementation (last call for co-financing in 2016/2017) 😞
  - How much grant is sufficient?
    - EE is revenue generating activity: energy saving -> money saving = revenue
    - Cost – benefit analysis must be performed to reveal financing gap
    - Analysis showed that for residential sector grant of 60% is needed to make project financially viable!
    - **SEE reality:** poor economic conditions -> reduced heated area, high share of fuel wood in residential sector (>60% in SFH, >10% in MAB), relatively low energy prices, mistrust in institutions and banks...

# What's next? Even more ambitious targets for 2021-30...

- New Programme for 2021-2030 under preparation
- Targets and investments needed (Long-term strategy)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Targeted surface [10 <sup>6</sup> m <sup>2</sup> ]	0,30	0,30	0,49	0,48	0,66	0,64	0,80	0,78	0,93	0,90
Investment [million HRK]	909,45	898,88	1.459,35	1.438,20	1.966,95	1.914,08	2.411,10	2.337,08	2.781,23	2.686,05
Ukupno 2021 -2030 [million HRK]	<b>18.802,35 (2,5 billion EUR)</b>									
Ukupno 2021 -2024 [million HRK]	4.705,88									

- Much higher art.7 EED target (54 vs.125 PJ)
  - 70% of art.7 target to be achieved by EEOS, while 30% by alternative measures
  - Programme for MAB is alternative measure -> expected savings approx. **22,5%** of national cumulative savings target for alternative measures, which equals approx. **6,8%** total national cumulative target

# ... and new challenges

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- Increase in prices of construction works: 51% between 2014 and 2019!
    - With stable energy prices in the same period
  - Combination of energy and structural renovation -> **earthquake!**
    - Huge increase in costs that are not possible to be recovered by energy cost savings (1.500 HRK/m<sup>2</sup> -> 3.500 HRK/m<sup>2</sup>)
  - Availability of public financing
    - National Plan for Recovery and Resilience – 1 billion HRK to be divided between public and MAB
    - New OPCC for the use of ESI funds still under development
    - National EE Fund to be used for other purposes (e.g. SFH)
  - **Blending public and private money** – loans with performance based grant component?
  - Broadening the scope of measures (e-mobility, fire protection, indoor climate, accessibility)
  - Stronger technical requirements – from 50%  $Q_{H,nd}$  to 50%  $E_{prim}$  -> nZEB renovation?
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# Link with EEOS?

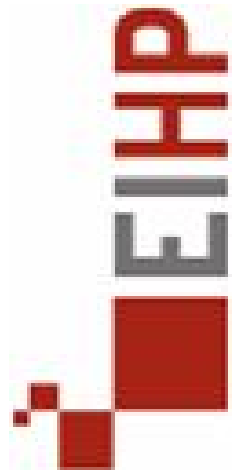
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- Main info on EEOS in Croatia
    - Functional since 2019 - > only 2 years of experience
    - Obligated parties all suppliers of electricity, natural gas, heat and oil derivatives with annual sales > 50 GWh (300 -> 100 -> 50 GWh)
  - Until 2020 no focus on MAB from obligated parties
  - High targets for period 2021-2030 might change this situation
    - 70% of national Art. 7 targets shall be achieved by EEOS
  - Expected developments
    - Heat suppliers to undertake measures in MAB connected to DHS (reconstructions of heat substations, regulation of systems)
    - PV installations on MAB (new RES Law in procedure)
    - Actions for vulnerable customer and customers on underdeveloped areas (increase of savings by 20 or 10%, respectively)
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# Thank you for your attention!



At your disposal for questions and discussion...



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