

# **The national renovation programmes in Croatia**

- Reducing the heat demand before replacing the heating  
system -

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Enefirst webinar #3:

“Energy Efficiency First in practice: implementing integrated approaches”

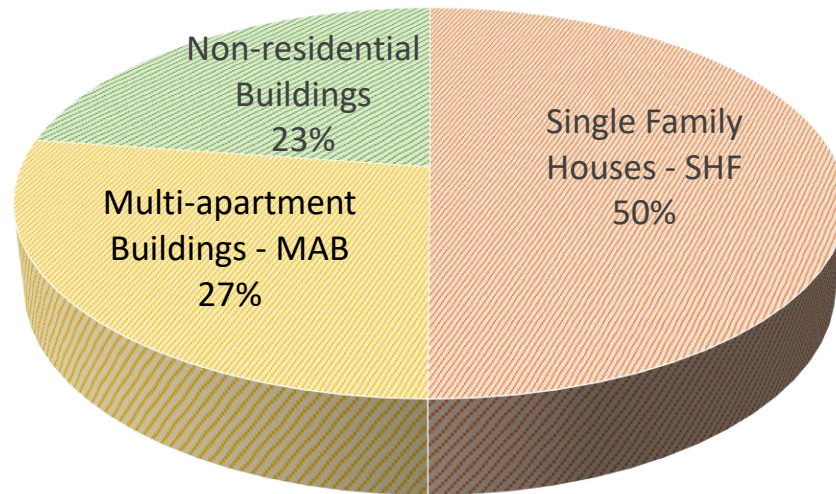
on-line, 30<sup>th</sup> November 2021

- Introduction of energy renovation programmes in Croatia
- EE1<sup>st</sup> in practice
  - Single-family houses
  - Multi-apartment buildings
- Lessons learned

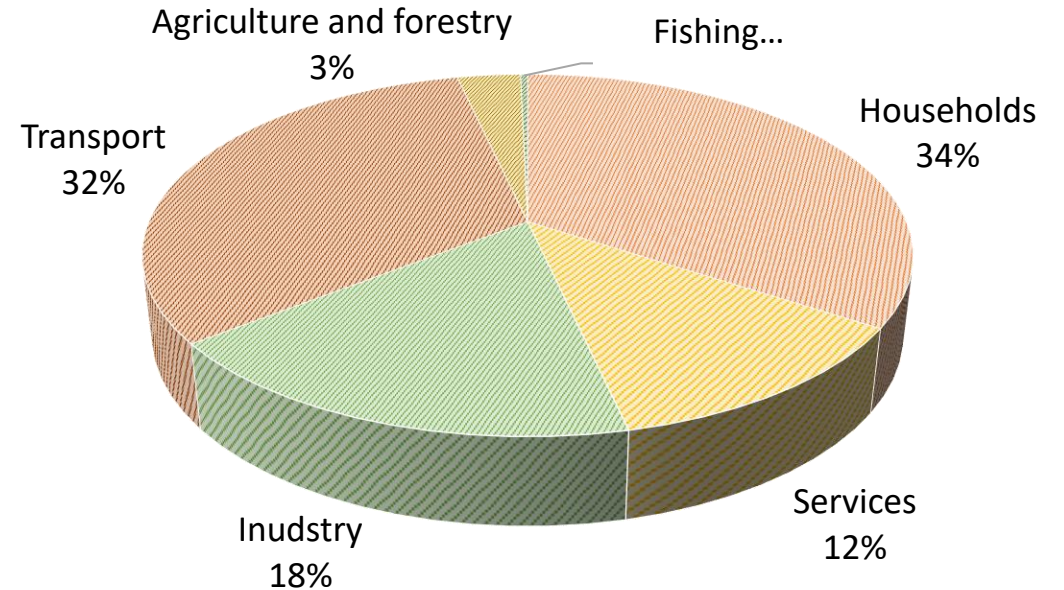
# Croatian energy consumption and building stock



CROATIAN BUILDING STOCK (HEATED AREA)



FINAL ENERGY CONSUMPTION



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

# Programmes for energy renovation of buildings 2014-2020



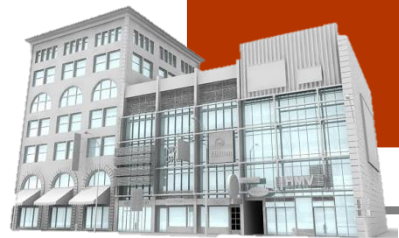
## Single-family houses

- Programme 2014-2020 (updated in 2015, 2020 and 2021)
- Grants from national EE Fund up to 80% in period 2014-2016, 60% in 2020



## Multi-apartment buildings

- Programme 2014-2020
- Grants up to 40% from national EE Fund 2014-16
- Grants up to 60 % from ESI funds 2017-2020



## Public / Commercial buildings

- Programme 2014-2015 -> ESCO model (central government buildings)
- Programme 2016-2020 -> grants from ESI funds

# Single-family houses 2014-2016

- In period 2014-2016 co-financing of individual measure in houses allowed regardless of their energy demand (need)
- No conditions for energy savings, no obligatory measures
  - Building envelope (walls, roofs, floors, windows and doors), biomass boilers (including fuel wood pyrolytic), solar thermal, photovoltaic, gas condensing boilers
- Completed approx. 12.800 projects – paid grants > 597,7 million HRK (80 million €)
  - > 9.300 projects included measures on building envelope
  - > 500 projects included both envelope and HVAC system measures



Photo source: Environmental Protection and Energy Efficiency Fund

# Single-family houses 2020 - 2021

- Programme amended (caused by reasons other than EE1<sup>st</sup>)
  - Only the worst performing houses eligible for grants -> class **D** or worse in continental part and **C** or worse in coastal part of Croatia
- No conditions for energy savings, no obligatory measures, BUT
  - Gas condensing and fuel wood pyrolytic boilers no longer subsidised
    - Driver of the change: **decarbonisation and air pollution**
  - Measures on HVAC (biomass boilers, solar thermal, heat pumps) eligible only in combination with measures on building envelope
    - Driver of the change: **EE1<sup>st</sup>**
- > 7.000 applications -> contracted > 3.000 projects
- Majority of contracts are for building envelope measures (walls, roof and windows)
- New public call for co-financing in 2021 just about to be opened
  - For the worst performing buildings, co-financing possible only for
    - Individual measures on building envelope or combination thereof or
    - Combination of at least one building envelope and one RES system measure
    - **Not possible to implement only RES measures**
  - Better performing buildings (C or better in continental and B or better in coastal)
    - Only RES measures



Photo source: Environmental Protection and Energy Efficiency Fund



# Single-family houses 2022 - 2030

- New programme for energy renovation of single-family houses prepared -> adoption pending (expected soon)
  - Implementation of individual measures de-stimulated through lower co-financing rate (40%)
  - Individual measure depending on the energy class of the building
    - Not eliminated completely to enable applications of those that have already implemented some measure themselves
    - Worse performing building must implement at least one measure on the building envelope (no energy saving threshold)
    - Better performing building may only implement RES systems
  - Deeper renovation stimulated
    - Reduction of  $Q_{H,nd}$  of at least 50% as a condition for obtaining 60% co-financing
    - Reduction of  $Q_{H,nd}$  of at least 50% and reduction of  $E_{prim}$  of at least 50% as a condition for obtaining 80% co-financing
    - Achieving nZEB standard after renovation as a condition for obtaining 85% co-financing



# Multi-apartment buildings 2014-2016 and 2017-2020

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- In period 2014-2016 co-financing provided from national sources with 40-60-80% co-financing rate depending where building is located
  - Result: **430** renovated buildings
  - EE1<sup>st</sup> applied from the start!
    - Minimal required reduction of  $Q_{H,nd}$  of **at least 30%** as a condition for obtaining co-financing
- In period 2017-2020 co-financing provided from ESIF sources with 60% co-financing rate
  - Minimal required reduction of  $Q_{H,nd}$  of **at least 50%** as a condition for obtaining co-financing
  - Result: **542** renovated buildings



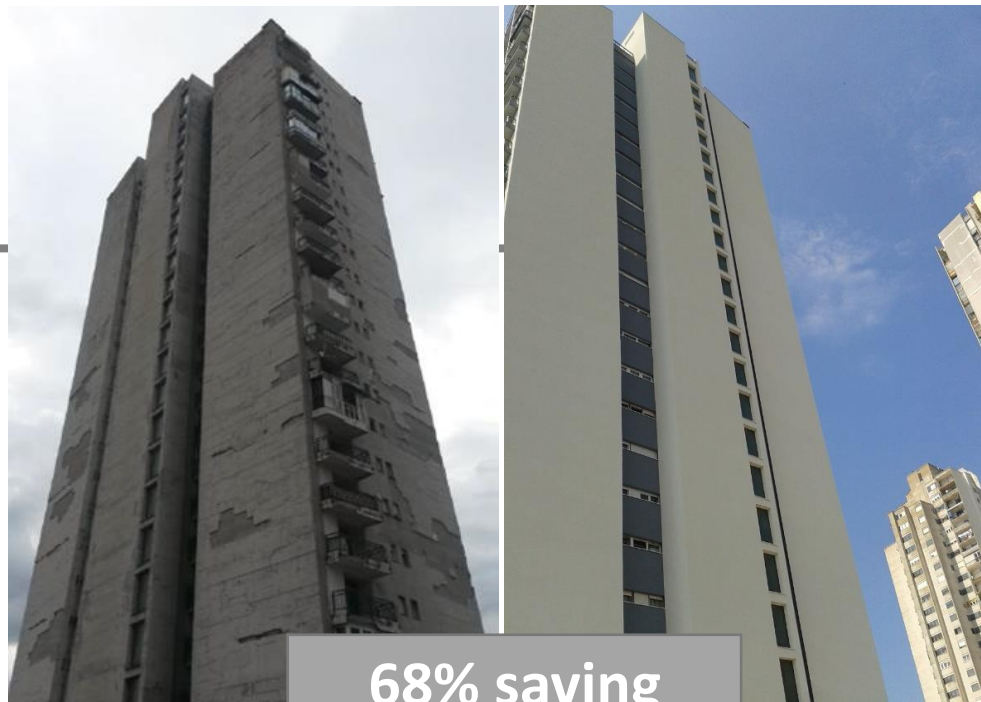




61% saving



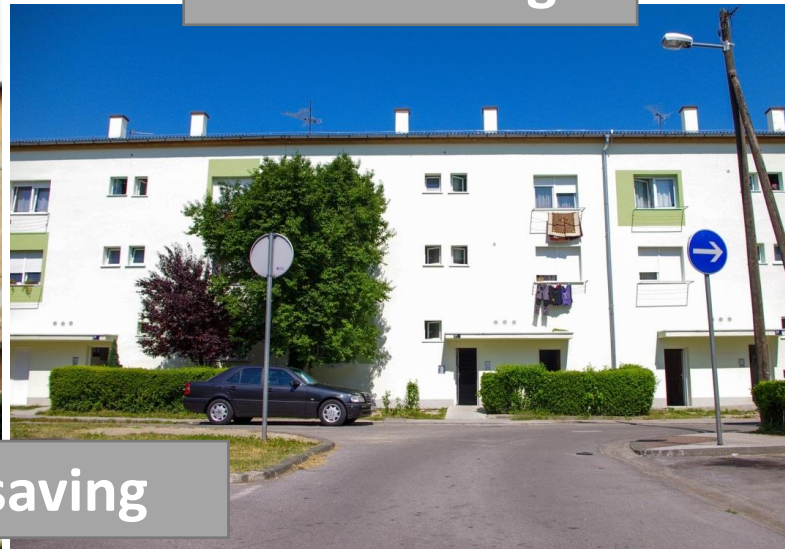
50% saving



68% saving

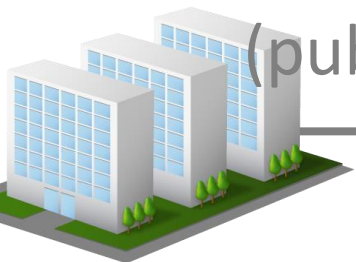


79% saving



# Multi-apartment buildings 2022-2030

- New programme for energy renovation of single-family buildings prepared -> adoption pending (expected soon)
  - Minimal required reduction of  $Q_{H,nd}$  of **at least 50%** remains the condition for participation in programme and obtaining 60% co-financing
  - Deeper renovation stimulated
    - Reduction of  $Q_{H,nd}$  of at least 50% **and** reduction of  $E_{prim}$  of at least 50% as a condition for obtaining 80% co-financing
    - Achieving nZEB standard after renovation as a condition for obtaining 85% co-financing
- The same conditions are applied in programme for non-residential (public) buildings

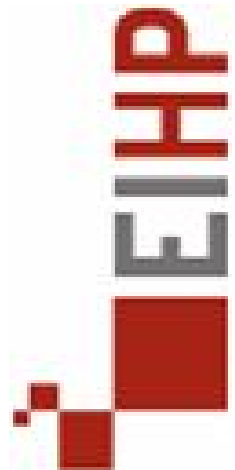


- EE1<sup>st</sup> in practice
  - Main principle – firstly reduce the needs and then improve efficiency of systems
  - A bit harder to implement in stages (single-family houses) than from the start (multi-apartment buildings)
    - Easier to strengthen existing (known) requirements than to add new
  - Communication of new requirements to all parties involved is necessary
- Integrated approach (full-scale EE+RES at the same time) would be optimal solution for decarbonization of building sector
  - New challenges in integrated approach to building renovation ahead of us – e-mobility and green infrastructure integration

# Thank you for your attention!



At your disposal for questions and discussion...



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