



Seismic-Resilient and Energy-Efficient Buildings: Croatia's Model of Comprehensive Renovation

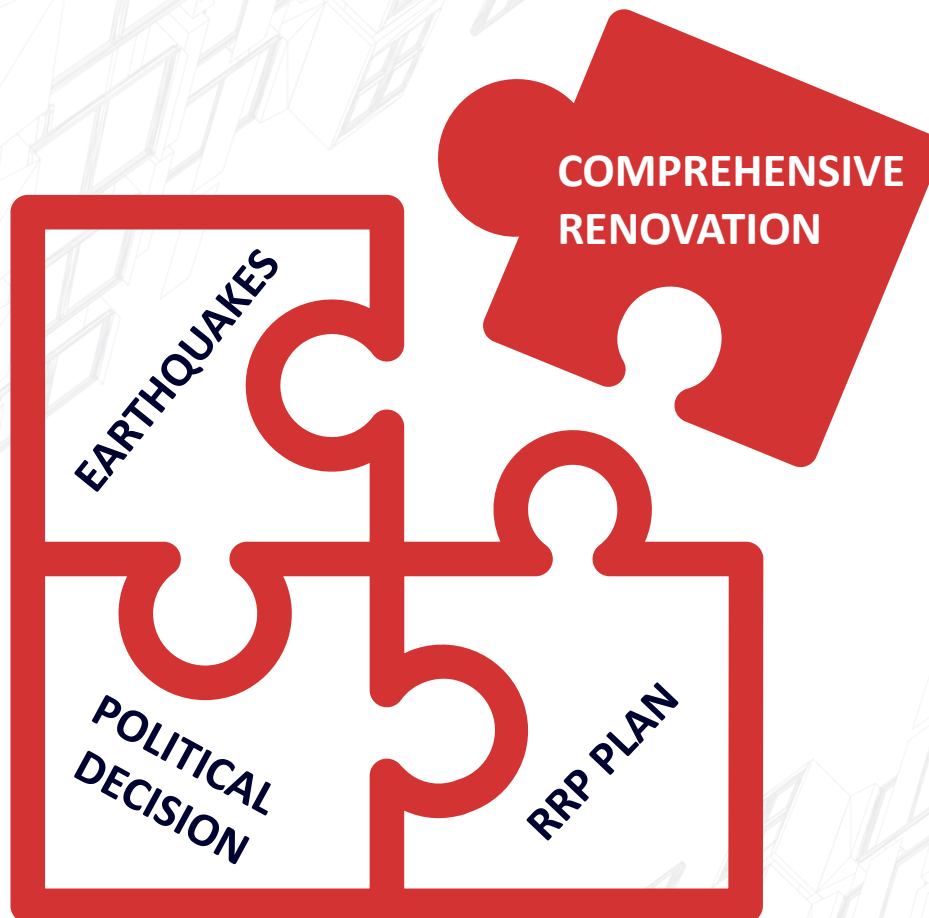
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Post-Earthquake & Energy Renovation Strategy

Strong earthquakes that struck Croatia in 2020 acted as a „**trigger point**” for a comprehensive renovation.

Comprehensive renovation is mandatory for all public buildings **by government decision**.



Damaged buildings are being seismically and energy renovated under the "**Build Back Better**" principle.

The Recovery and Resilience Plan was programmed in 2021, with a budget of €10 billion for Croatia; 20% (€2 billion) is allocated to the flagship initiative: **Renovation of Buildings**.

Blending approach



EUSF

RRF

Available funding
supported
implementation of
"Build Back Better,"
principle

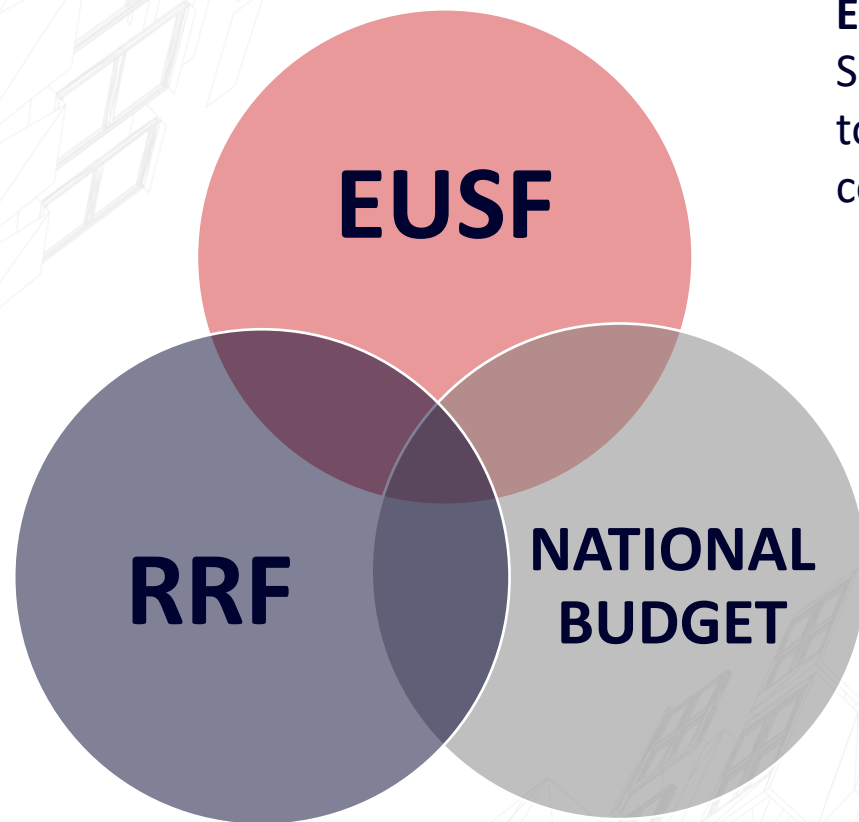
Structural renovation
and energy
renovation with
improvements are
simultaneously
carried out

Blending of Multiple Sources

BLENDING OF EUSF AND RRF IS RECOGNISED AS A PERCENTAGE WITHIN THE COMPLETE RENOVATION PROJECT

RRF - ENERGY EFFICIENCY and IMPROVEMENTS

Share of total renovation costs (%) for energy efficiency and improvements according to “Build Back Better” principle



EUSF - STRUCTURAL RENOVATION

Share of total renovation costs (%) related to restoring to building's pre-earthquake condition

NB - OTHER COSTS

non-eligible for EUSF and RRF

Blending of Multiple Sources

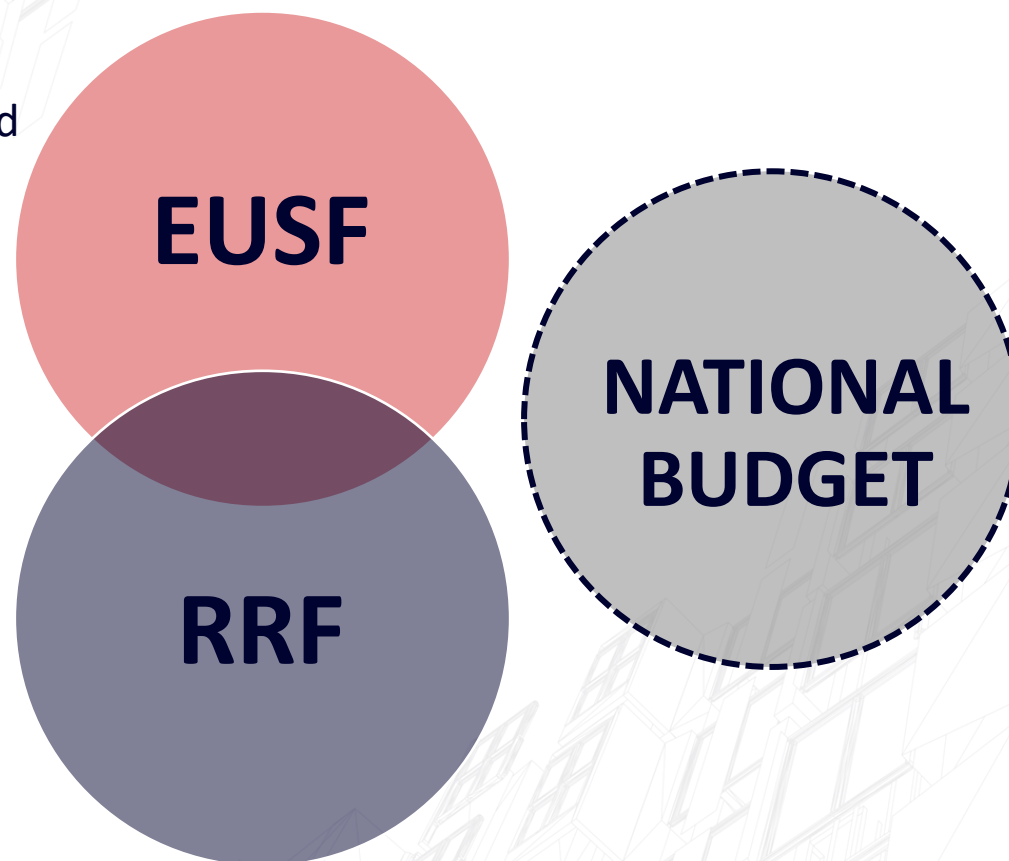
BLENDING OF EUSF AND RRF IS RECOGNISED AS A PERCENTAGE WITHIN THE COMPLETE RENOVATION PROJECT

EUSF - STRUCTURAL RENOVATION

Share of total renovation costs (%) related to restoring to building's pre-earthquake condition

RRF - ENERGY EFFICIENCY and IMPROVEMENTS

Share of total renovation costs (%) for energy efficiency and improvements according to "Build Back Better" principle



NATIONAL BUDGET – CLOSING FINANCIAL GAP
Costs non-eligible for EUSF and RRF and above allocation

Legal Framework

Reconstruction
Act

Building Act

Earthquake
damaged
Buildings
Measures
Program

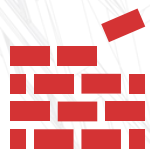
Technical
Regulation on
Building
Structures

Decisions on
Declaring a
Natural
Disaster

Government
Decisions
(financial)

Build back better measures

COMPREHENSIVE RENOVATION



STRUCTURAL RENOVATION

Works that bring the **building to a state of full construction usability** which includes:

- repair of non-structural elements
- repair of the structure
- reinforcement of the building structure or
- complete reconstruction of the structure

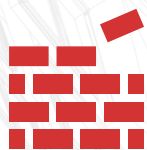
ENERGY RENOVATION and IMPROVEMENTS



Measures **to improve the existing condition of the building**, this includes:

- measures to improve the mechanical resistance and stability of the building to reduce the risks associated with earthquakes
- energy renovation measures
- measures to increase safety in case of fire
- measures to ensure healthy indoor climate conditions

Renovation levels



Building renovation in accordance with the level of damage and classification of importance

LEVEL 1

non-structural
repair

**All
buildings**

LEVEL 2

structural repair

**Industrial
buildings**

Residential and commercial buildings

LEVEL 3

structural
reinforcement

**Single family
and public
buildings**

LEVEL 4

complete structural
renovation

**Hospitals,
first responders
and other vital
buildings**

Organizational Framework

Government of the Republic of Croatia

Ministry of Physical Planning, Construction and
State Assets

National Coordinating Body

Ministry of
Science and
Education

Ministry of
Health

Ministry of
Culture and
Media

City of
Zagreb

Implementation Bodies

Ministry of
Finance

Financial Regulatory Body
Coordinating Body - RRP

Central Finance and
Contracting Agency

Independent Audit Body
Supporting Body for IB

Comprehensive renovation projects - overview



56%

Comprehensive renovation projects

INVESTMENT

C7.2 I2

Energy and post earthquake renovation of public buildings damaged by the earthquakes

RESPONSIBLE for IMPLEMENTATION

Ministry of Science,
Education and Youth

Ministry of Health

Ministry of Culture
and Media

City of Zagreb

PROJECTS

66

36

99

8

$\Sigma=209$

TARGET

596 495 m²

50% energy
for heating,
30% Eprim

MINIMAL
ENERGY
SAVINGS

State of play



78

WORKS
FINALISED



124

WORK IN
PROGRESS



7

PLANS FINALISED
WORKS NOT STARTED

Renovation process through other programmes

ONGOING

**COMPETITIVENESS
AND COHESION
PROGRAMME 21-27**

274 mil €

**NATIONAL RECOVERY
AND RESILIENCE PLAN
21-26**

580 mil €

WORLD BANK LOAN

184 mil €

UPCOMING

**MULTIANNUAL
FINANCIAL
FRAMEWORK 28-34**

SOCIAL CLIMATE FUND

Challenges



Alignment of the project implementation with procedures of all involved funds (EUSF, RRP, NB)



Implementation of complex renovation projects through extensive EU procedures



Liquidity of Beneficiary and lack of know-how



Rapid growth of construction work costs



Lack of qualified construction workers

Beneficiary Institutions

24

SCHOOLS

14

**GOV & STATE
INSTITUTIONS**

25

**HIGHER EDUCATION
INSTITUTIONS**

11

HOSPITALS

20

**ARCHIVES &
MUSEUMS**



Bužan Palace | Zagreb



Ivan Merz elementary school | Zagreb



Faculty of chemical engineering and technology | Zagreb



Clinical Hospital Merkur | Zagreb, Croatia



Thank you for
your time!



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