

# enefirst.



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# Implementing “Efficiency First” in EU and national policies

EUSEW extended programme  
21<sup>st</sup> October 2021



MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL



## Definition of Energy Efficiency First (E1st)

in the context of the ENEFIRST project

”

*‘Efficiency First’ gives **priority to demand-side resources** whenever they are more cost effective from a societal perspective than investments in energy infrastructure in meeting planning and policy objectives.*

*It is a **decision principle** that is applied systematically at any level to energy-related investment planning and enabled by an ‘**equal opportunity**’ policy design.*

“

For more details, see the [first ENEFIRST report](#) about background analysis

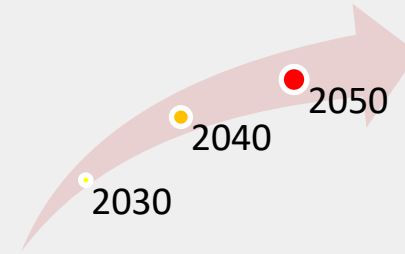
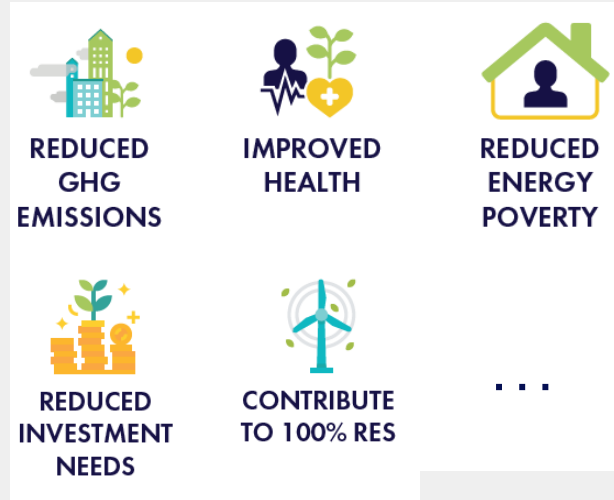
With a societal perspective

=

Multiple impacts

+

Long-term perspective



## Promoting an integrated perspective of E1st

.. to overcome silo thinking in policy making and implementation



.. to help policy officers, market actors and end-users to take other perspectives and consider implications for the whole energy system



.. to show how EU legislation should be better harmonized to enable integrated energy planning of supply- and demand-side options





## From implementation Maps to Policy Guidelines

### Buildings

- Fabric first approach
- Financial incentives for renewable energy systems linked to energy performance
- Planning instruments for investments in buildings

### Power sector

- Power market rules
- Transmission and distribution utility provisions
- Transmission and distribution incentives
- Dynamic tariff design

### District heating

- Integrated district heating planning and operation
- Network access for third-party waste heat providers

## Efficiency First example – Investment in RES linked to energy performance

### Heat Pump Grant - SEAI, Ireland

→ Financial support is granted if minimum energy performance levels of the building are met (E1st conditionality)



#### Benefits:

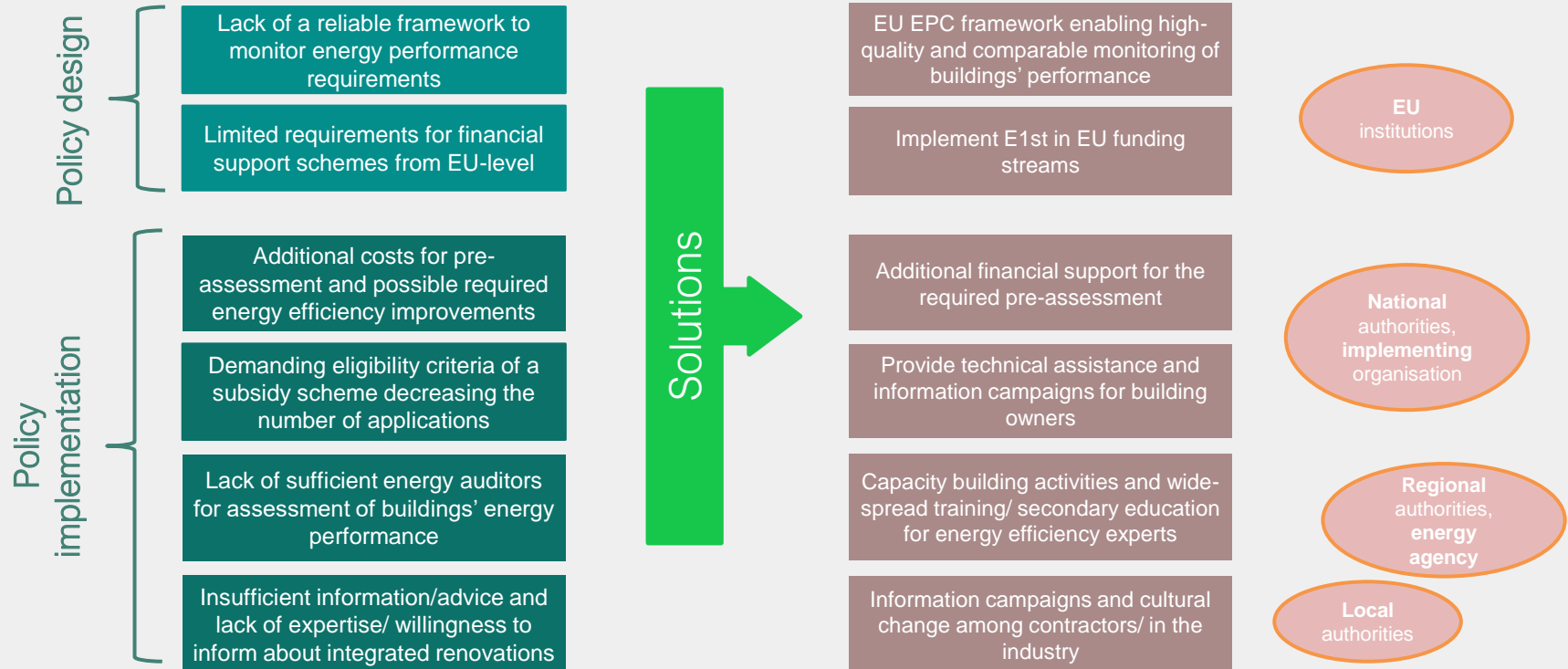
- ✓ Adequate sizing
- ✓ Incentive to improve the building envelope with benefits for the indoor climate and residents' health
- ✓ Positive impacts on the whole energy system

- Concept of Fabric first used in most Irish support programmes
- Preventing lock-in effects leading to high investments later on
- Technical assistance and additional support for potential renovations is important

# Main barriers to the design and implementation of E1st

## Financial incentives for RES linked to energy performance

Who needs to act?





## From Implementation Maps to Policy Guidelines

Energy Efficiency First as a way to promote integrated approaches..

...in energy planning

Integrated energy modelling

Integrated **energy infrastructure** planning

Integrated planning of **energy demand & supply** in buildings

..in energy-related investments

Considering **multiple impacts** in investment decisions

E1st in public financing

E1st in end user investment decisions

Energy market regulations

Complementary approaches to implement E1st

+ short analysis of the Fit-for-55 July package

## Integrated planning of energy demand & supply in buildings

Individual planning tools in building renovation investments (e.g., building passports)

- Including E1st calculations and provisions in planning instruments
- Helping owners to make better informed decisions

Municipal heat & renovation roadmaps

- Assessing the potential for energy-efficient and decarbonised heat supply given the estimated demand
- Inform public authorities and utilities
- Local heat roadmaps and renovation strategies should be linked

## Approaches included about E1st in public financing

Integration of E1st principle into EU funding streams

- Making E1st assessment a prerequisite for higher funding
- Minimum share of budget earmarked for demand side measures

Carbon revenue recycling towards energy efficiency

- Earmarking carbon revenues for energy efficiency measures

Public procurement

- Streamlining public procurement rules to include E1st
- Using public procurement as role model and good practice example

## Approaches included about E1st in end-user investment decisions

Financial incentives for RES  
linked to energy performance

- Investment into renewable energy installations should be subject to a minimum energy performance level of the building

Fabric first approach

- Achieve ambitious energy performance standards before addressing the heating system or building services

Minimum energy performance  
standards (MEPS)

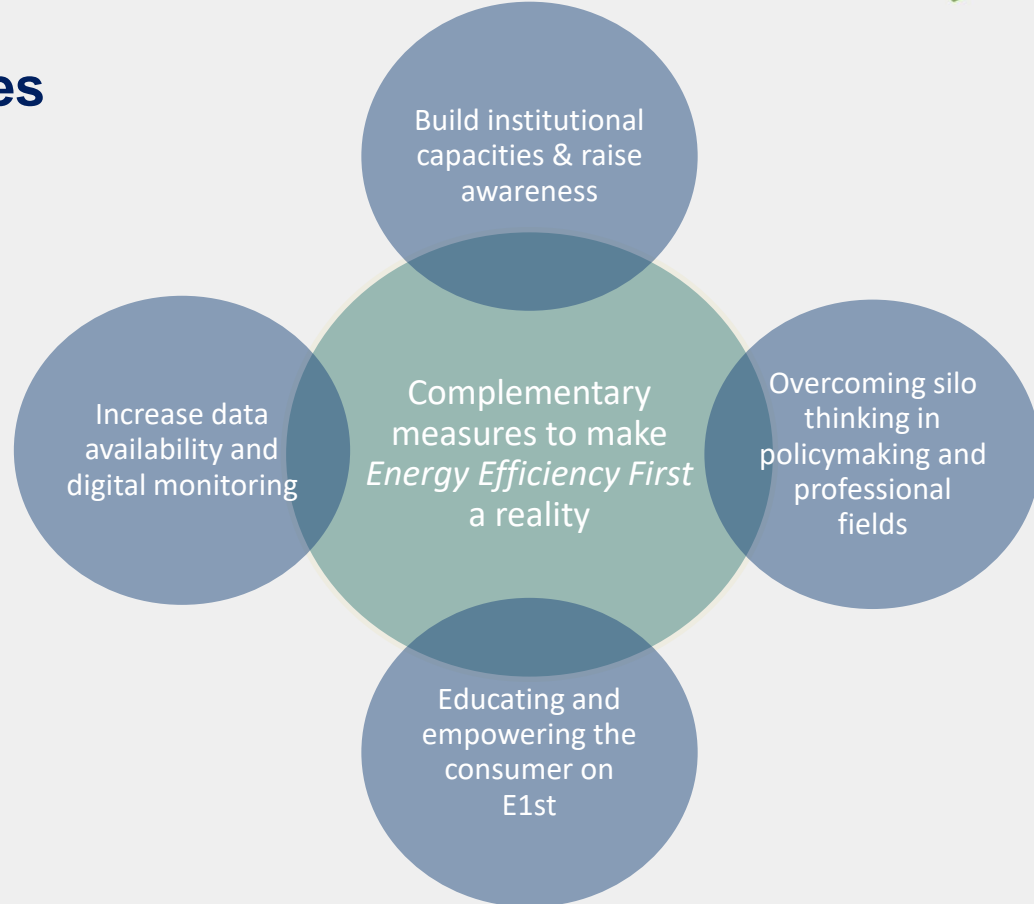
- Prioritize demand side measures in performance standards
- Set monitoring for demand reductions

Dynamic tariffs

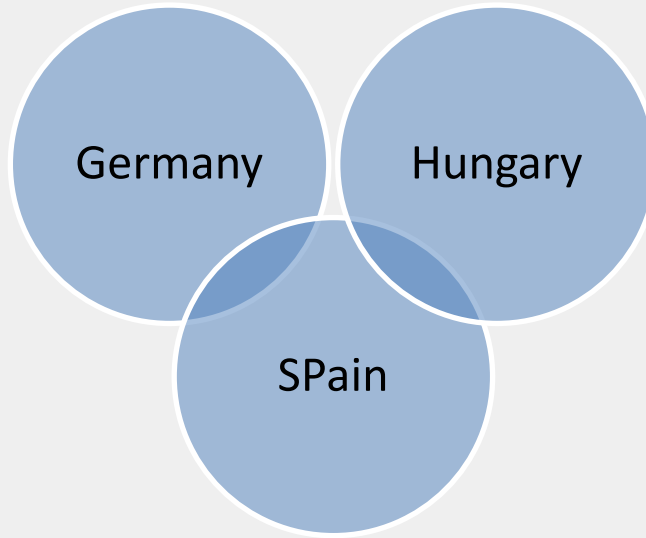
- Smart use of existing energy networks
- Incentivise consumer choices consistent with optimal choices from a power system perspective

## Complementary measures to implement E1st

Cross-cutting issues to  
promote the concept of  
E1st across policy areas  
and among different  
stakeholder groups



## Upcoming work on national policy implementation and transferability





# The ENEFIRST project provides model-based assessments of the « **Efficiency First** » principle at **two levels**

## Level 1: Energy system analysis for EU-27

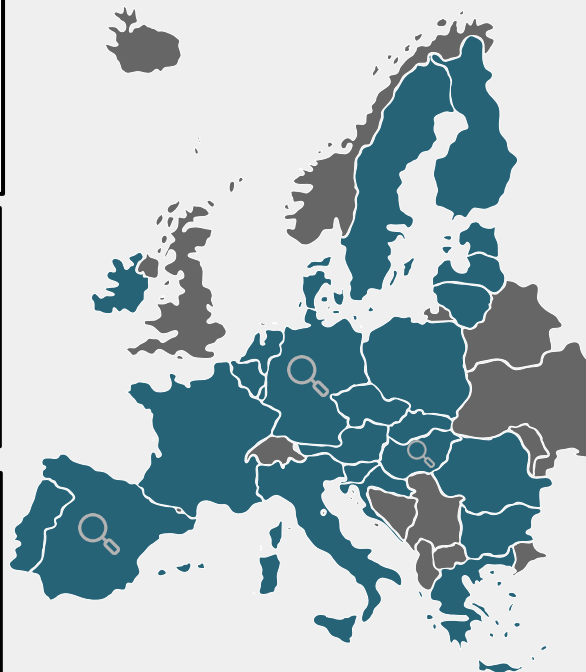
- **Research question:** What is the contribution of energy efficiency in the building sector to achieving European climate targets at the lowest possible cost?
- **Spatial scope:** Member States
- **Timeframe:** 2020 – 2050

## Level 2: Local case studies for 3 Member States




















- **Research question:** What is the contribution of energy efficiency in the building sector to achieving local planning targets?
- **Spatial scope:** Urban areas (cities, neighborhoods)
- **Timeframe:** 2020 – 2050

**For more details:**  
**register for free to the conference [EMP-E 2021](#)**

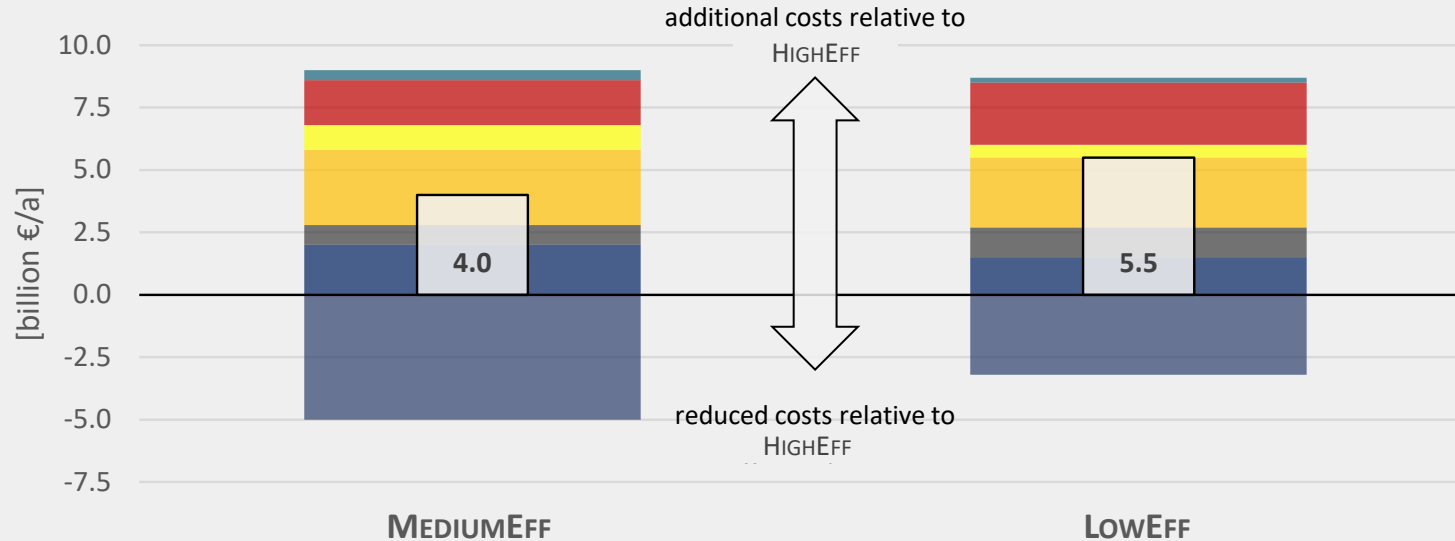
Presentation of ENEFIRST modelling on **Wednesday 27th of October**  
 in **parallel session #6** from **2 to 3.30 pm**  
 by Tim Mandel, Fraunhofer ISI



The system analysis (Level 1) considers **three scenarios** that meet climate targets for the years 2030 and 2050 in different ways

|                     |                         | SCENARIOS   |   |  |
|---------------------|-------------------------|---|---|--|
|                     |                         | Low efficiency in buildings (LOWEFF)  | Medium efficiency in buildings (MEDIUMEFF)  | High efficiency in buildings (HIGHEFF)   |
| Planning objective  | 2030                    | <ul style="list-style-type: none"> <li>≥55% reduction GHG emissions (1990)</li> <li>≥32% share for renewable energy</li> <li>≥32.5% improvement in energy efficiency</li> </ul> |   |  |
|                     | 2050                    | Climate neutral economy – net-zero GHG emissions  |   |  |
| SCENARIO NARRATIVES | Thermal efficiency      |  Low component requirements; low renovation rate   |  Moderate component requirements; moderate renovation rate   |  Strict component requirements; ambitious renovation rate   |
|                     | Appliance efficiency    |  Low minimum energy performance standards  |  Medium minimum energy performance standards                 |  Strict minimum energy performance standards                |
|                     | Building H&C equipment  |  Large installed capacities; balanced technology deployment                                    |  Medium installed capacities; balanced technology deployment |  Small installed capacities; balanced technology deployment |
|                     | Power supply            |  Large installed capacities; balanced technology deployment                                    |  Medium installed capacities; balanced technology deployment |  Small installed capacities; balanced technology deployment |
|                     | District heating supply |  Large installed capacities; balanced technology deployment                                    |  Medium installed capacities; balanced technology deployment |  Small installed capacities; balanced technology deployment |
|                     | Network expansion       |  Large installed capacities   |  Medium installed capacities                                |  Small installed capacities                                |
|                     | Hydrogen/ e-fuel use    |  Limited deployment  |   |  |

We highlight the **societal value of « Efficiency First »** by comparing the three scenarios in terms of total system cost and, later, multiple impacts



Placeholder  
data: Final  
results pending

- Building envelopes
- Fuel costs in buildings
- Electricity network expansion and operation
- Gas network expansion and operation

- Building equipment
- Electricity and district heating generation
- Heat network expansion and operation
- Total cost difference

# TIME FOR DISCUSSION

- ✓ Is the E1st principle already being widely implemented?
- ✓ How can public funding be streamlined with E1st?



- ✓ Who are the key stakeholders for E1st in energy system integration?
- ✓ Should municipalities be involved more closely?
- ✓ How can we overcome silo thinking?

Further reading:

[Report on defining and contextualizing the E1st principle](#)

[Report on international experiences with E1st](#)

[Report on barriers to implementing E1st in the EU-28](#)

[Report on priority areas of implementation of the Efficiency First principle in buildings and related energy systems](#)

[Report on implementation maps on barriers and success factors for E1st in buildings](#)

Coming soon: Guidelines on policy design options for implementation of E1st in buildings



Thank  
you!



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