



World Sustainable Energy Days

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**European Energy Efficiency
Conference 2021**

Energy Efficiency First: What does it mean in practice?

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enefirst.



MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL



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Putting Energy Efficiency First

What should it change?

Considering **energy systems as a whole**

Supply-side resources

Demand-side resources



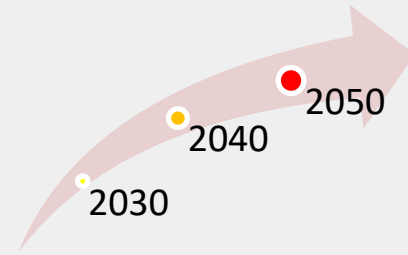
With a **societal perspective**

Multiple impacts

=
+

Long-term perspective

- REDUCED GHG EMISSIONS
- IMPROVED HEALTH
- REDUCED ENERGY POVERTY
- REDUCED INVESTMENT NEEDS
- CONTRIBUTE TO 100% RES
- ...



Going
CLIMATE-NEUTRAL
by **2050**

A STRATEGIC LONG-TERM VISION FOR
A PROSPEROUS, MODERN, COMPETITIVE
AND CLIMATE-NEUTRAL EU ECONOMY

Definition of 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

Check-list for implementing E1st

- 1) **Are demand-side resources considered** when comparing / planning / deciding investments?
(especially when planning / deciding investments in energy infrastructure)
- 2) Are demand-side resources **assessed and valued on a fair basis** compared to supply-side investments (or other investment types)?
- 3) What is the ultimate decision-making rule once the assessment is done?
Is a **priority** given to demand-side resources **when relevant**?

Example of decision+policy at building level

Replacing the heating system → policy promoting RES/decarbonised heat

Efficiency First

→ Incentive IF minimum energy performance of the building envelope is met first (E1st conditionality)



- ✓ Right sizing
- ✓ Positive impacts on the whole energy system

Example: Fabric First Approach applied in the [SEAI Heat Pump system grant](#)

Efficiency Last

→ Incentive based on the expected heat demand or amount of heat produced



- ✓ Over-sizing
- ✓ Negative impacts on the whole energy system

(see e.g. Rosenow & Pato (2020). [Efficiency First must tackle implementation issues to be effective](#))

Example at local level (+ electricity sector)

Possibility for the DSO to experiment programmes where they procure **demand-side resources as alternatives** to investments in the network infrastructures in congested areas

[Social Constraint Management Zones to harvest demand flexibility \(UK\)](#)

See presentation at the [first ENEFIRST webinar](#)

Example at macro level (+ all energy carriers)

Comparing **long term scenarios** to meet carbon neutrality, with different mix of interventions / **balance between demand-side and supply-side investments**

(with a 'total system cost' perspective)

Under modelling by ENEFIRST (EU level)

See also examples at national level:
e.g., RTE study to investigate the impact of heat pumps deployment according to various levels of improvements of the building stock

(presentation at [second ENEFIRST webinar](#))

16 examples analysed by the ENEFIRST team (+ 18 gathered from other sources)

No.	Case
1.	Using ToU (Time-of-Use) tariffs to engage consumers and benefit the power system
2.	Social Constraint Management Zones to harvest demand flexibility
3.	Demand flexibility in District Heating networks
4.	Participation of Demand Response (DR) in French wholesale electricity market
5.	Enabling rules for Demand Response (DR) aggregators
6.	Decoupling utility sales and revenues
7.	Replacing a polluting power plant with behind-the-meter resources
8.	Updating distribution system planning rules in Colorado and Nevada
9.	Assessing the value of demand-side resources
10.	Water heaters as multiple grid resources
11.	Building Logbook – Woningpas: Exploiting efficiency potentials in buildings through a digital building file
12.	Optimising building energy demand by passive-level building code
13.	Deferring T&D (Transmission & Distribution) infrastructure investments through local end-use efficiency measures
14.	Building energy performance requirements of the Irish Heat Pump System grant
15.	Fabric First approach under the Better Energy Communities grant scheme
16.	Linking RES (Renewable Energy Sources) support to building energy performance

Barriers to E1st (in general)

Different from the 'classical' barriers to energy efficiency

(cf. limitations or bias in the investment options considered or in the decision-making)

- Lack of expertise, knowledge, awareness or understanding about E1st
 - Habits and practices tending to give priority to supply-side options, disregarding demand-side options
 - Too narrow scope of cost-benefit analysis
 - Making E1st a common practice implies making E1st part of everyone's language & work
- need for:
- cultural change along the whole chain of actors
 - resources, examples and experience sharing
 - better consideration of multiple impacts

Results from an online survey of 45 stakeholders. See ENEFIRST (2020). [Report on barriers to](#)

[implementing E1st in the EU-28.](#)

Screening policy areas at EU level

Buildings	Power sector	District Heating
Minimum energy performance standards	Market reform and operation	Efficiency in heating and cooling
nearly Zero Energy Buildings	TSO and DSO planning and operation	Cost-benefit analysis
Long Term Renovation Strategy	Dynamic tariff, network tariff	Use of waste heat
Energy Performance Certificates	Market access of aggregators	Planning for district heating and cooling
Building renovation passports	TEN-E regulation	RES heat
Etc.	Etc.	Etc.

Screening also policies related to gas, end-use efficiency and climate + EU funding schemes

See ENFIRIST (2021). [Priority areas of implementation of the Efficiency First principle in buildings and related energy systems.](#)

Identifying policy approaches to implement E1st

Buildings

- Fabric first approach
- Financial incentives for RES 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

Conclusion: **E1st = paradigm shift** that requires political and technical support to happen

Coming soon from the European Commission:

- Guidance on E1st
- Fit to 55 package

Coming over summer from ENEFIRST

- Modelling results
- Policy implementation maps and guidelines

Thank you

To go further:

[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](#)

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