

Energy Efficiency First Tested: MS-cases

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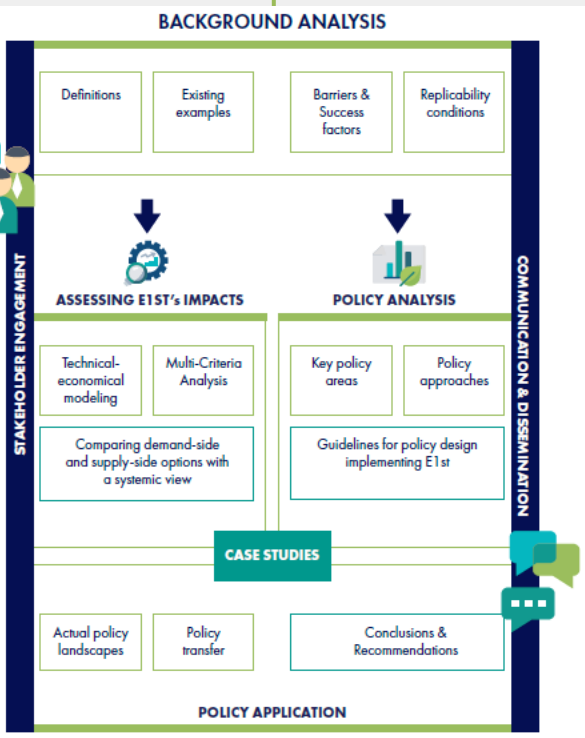


MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL



Content

- ▶ Starting point for case studies
- ▶ Three EE1st measures in three countries
- ▶ Local relevance and replicability
- ▶ Conclusions

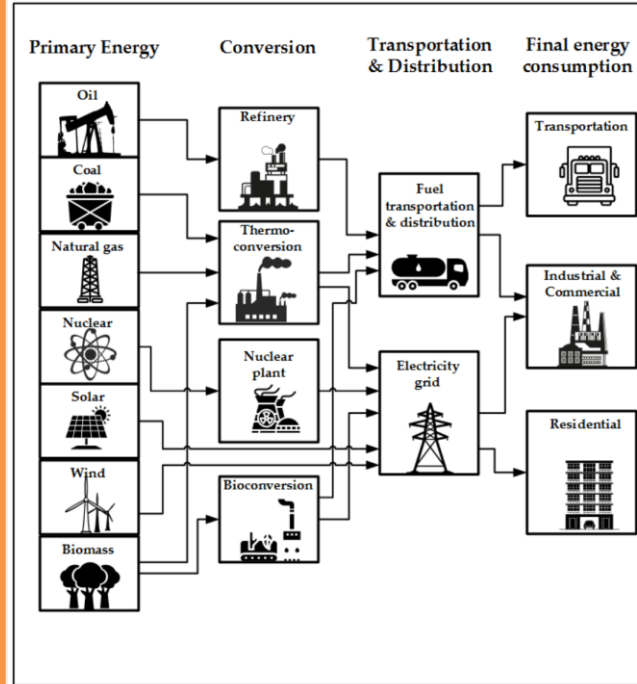


Energy system transition

- Traditionally:
 - Energy sources mix
 - Diversification & tech. improvement
 - Energy security
 - Infrastructure-set pathways

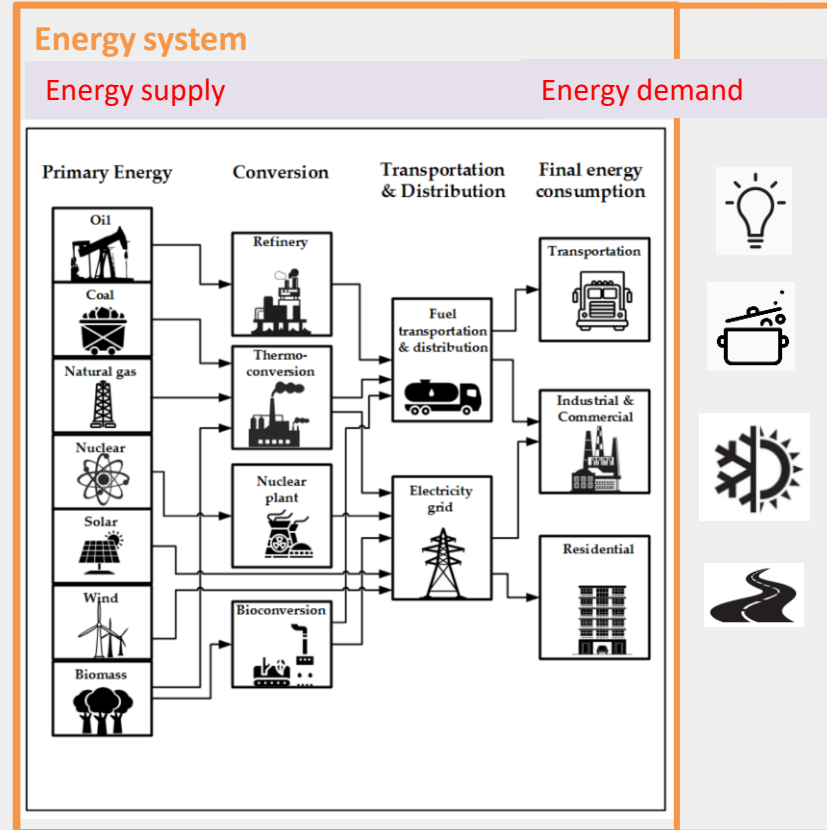
Energy system

Energy supply



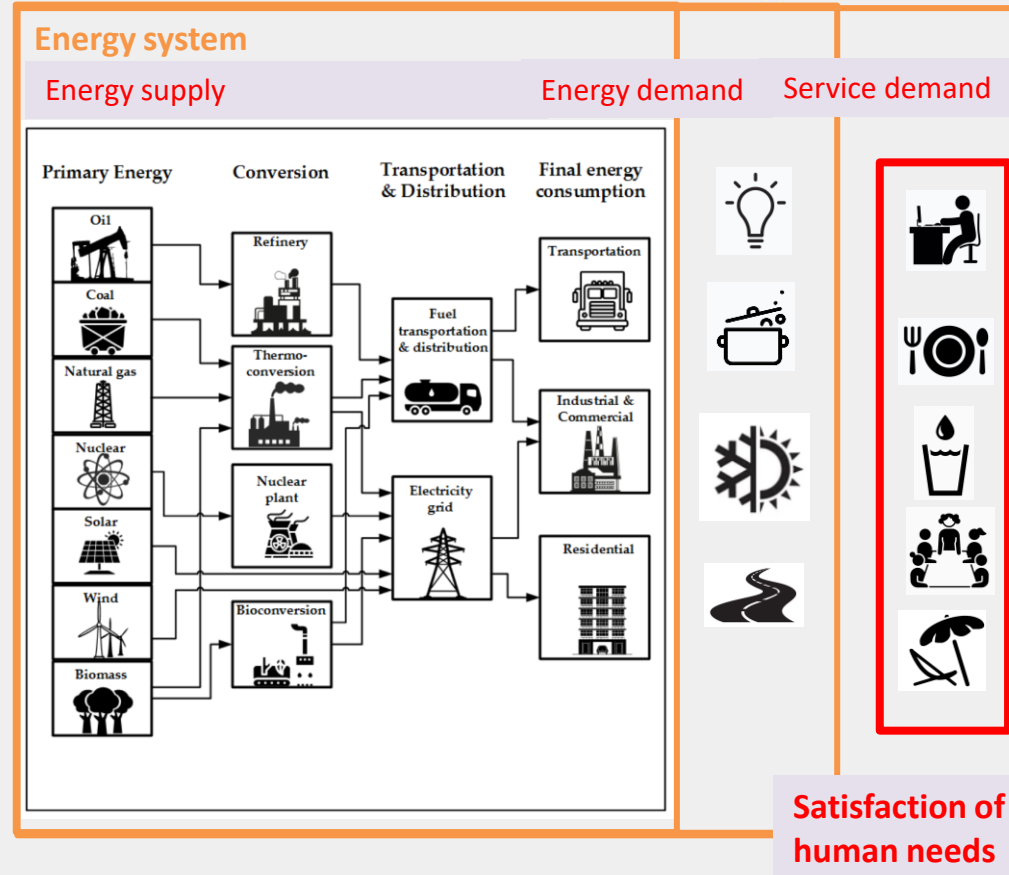
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Energy system transition

- Traditionally:
 - Energy sources mix
 - Diversification & tech. improvement
 - Energy security
 - Infrastructure-set pathways
- Service-based approach
 - ⇒ Service provision
 - ⇒ Satisfaction of human needs



Definition of Energy Efficiency First (E1st) in the context of the ENEFIRST project

Beyond investors

*'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.*

= changing decision methods and cultures

Basis for comparison = sum of targets (impacts, urgency, etc.)

EU, national, local + ...

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

With a societal perspective

=

Multiple impacts

+

Long-term perspective



A brief history of the Energy Efficiency First concept

From the 1980's, development of approaches for energy planning to take into account that **acting on the demand is possible**

Mostly about the electricity sector + US + integrated utilities / vertical monopolies

Demand-Side
Management

Least-Cost
Planning

Integrated
Resource
Planning

Energy
Efficiency as
a Resource

Late 1990's / early 2000's: liberalization of the energy markets
→ new context to develop energy efficiency activities

Energy Efficiency
Obligation Schemes

2010's: **something more is needed**
need to take into account demand-side
resources **more systematically**
+ with a **broader perspective**

First
Fuel

Energy
Efficiency
First

2016: [EC communication](#) on
Clean Energy for All Europeans

2018: [Governance Regulation](#)

⁸ (cf. multiple impacts, long term)

See the first [ENEFIRST report](#) for more details !

Aim of the policy assessment



- 1) Identify exemplary international experiences
 - Focus on buildings
- 2) Challenge three case countries for adoption and appropriateness
 - Discuss the identified policy approaches
 - Assess applicability: barriers, relevance, design
- 3) Identify further EE1st options



Where to find more information

D2-2. Report on international experiences with E1st

D2-4. Report on barriers to implementing E1st in the EU-28

D4-1. Priority areas of implementation of the Efficiency First principle in buildings and related energy systems




D4-2. Implementation maps

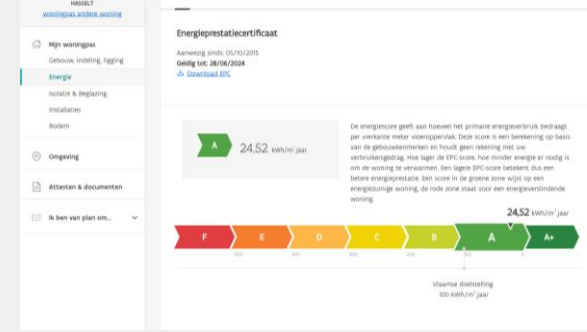
D4-3. Guidelines on policy design options for the implementation of E1st in buildings and the related energy systems

D5-1. Report on in depth policy design analysis as a prerequisite for EE1st implementation

D5-2. Report on transferability of ENEFIRST lessons on integrating EE1St to policy instruments to EU MS

Implementing EE1st: measures

		Energy system	District level	Building level
Regulations		integrated network/system planning + DR		passive level building codes, fabric first approach
Financial measures			EnPC solutions	performance-linked subsidies
Assistance Info				Planning instruments (logbook, building passports)



Optimising energy performance through passive-level building code

Brussels

The “passive house law” (PEB Regulation) of the Brussels’ region is part of a policy package developed over the years since 2002.

Fabric First approach

Ireland

Building design and renovation to maximise the energy performance of the components and materials that make up the building fabric itself.

Building logbook (digital)

Flanders

Building-specific datafile with performance, advice, the housing quality and data on the environment.

Optimising energy performance through passive-level building code

Policy package with gradual development & market preparation:

2002: thermal regulations (K55) in 2002 had set out insulation requirements.

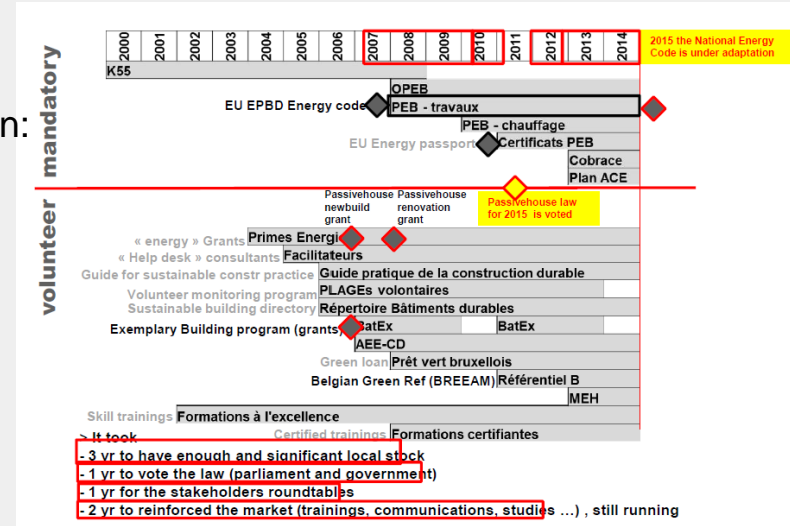
2006: a few public buildings renovated to passive-level, as demonstration sites.

2007-2013: competitive programme for exemplary buildings (BatEx) providing financial support on a competitive basis -> closing the performance gap + growth of supply side

2011: regulation adopted

2015: close-to-passive level codes for new construction

2017: building code extended to most of the renovation works



Replication opportunities of passive level building codes

Germany: Buildings Energy Act (GEG), 2020:

- requirements for the energy performance of buildings,
- issuing and use of energy performance certificates,
- use of renewable energy in buildings ,

-> review foreseen in 2022: opportunity to integrate overall performance.

Spain: CTE-DB-HE0 as part of the building code – non-renewable energy demand requirement

- Lack of transparency (conversion factors).
- Disincentives – redesign with EE1st would balance the need for flexibility (climate and demand).

Hungary: still expecting nZEB introduction (2022)

- low ambition (ca. 100 kWh/m²/year)
- RES and EE separated requirements

Designing building codes in line with EE1st

- using a broad scope of costs and benefits when defining the levels of minimum requirements;
- ensuring these minimum requirements are in line with the national long-term objectives (to avoid lock-in effects);
- ensuring that the requirements allow for a fair comparison between demand-side options (e.g., reducing the energy needs) and supply-side options (e.g., new or renewed generation, on-site RES, efficiency of distribution, etc.).

Fabric First approach

A 'fabric first' approach to building design and renovation aims to **maximise the energy performance of the components and materials** that make up the building fabric itself, before considering the installation of heating systems and other building services in order to **achieve ambitious energy efficiency levels**. It can either be applied directly in building regulations to cover new as well as existing buildings or as general approach in renovation subsidy schemes.

Business as usual	E1st scenario
Nearly zero-energy building (nZEB) standards calculated according to the EPBD Annex I methodology vary across MS, lack ambition and can be achieved with RES	Achieving an EU-wide low energy building standard by prioritising the thermal performance of the building envelope of existing and new buildings
Renovation subsidy schemes supporting both upgrades of heating systems and energy performance improvements depending on cost-optimality for the building owner	Renovation support schemes implement 'fabric first' through eligibility criteria prioritising efficiency measures and/or binding financial incentives to energy performance levels achieved

Fabric first approach

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: [SEAI Heat Pump system grant](#)

- an overarching principle applicable to all buildings' policies,
 - building regulations
 - incentive schemes for renovations
 - Incentive scheme application in Ireland:
 - Better Energy Communities (BEC), 2012
 - Heat Pump System Grant schemes, 2018
- > number of applicants reduced, overall savings increased: needs for adjustments

Fabric first replication opportunities

Germany: former KfW programmes :

- Grants linked to the EffizienzHaus label,
- Lower uptake than expected - Upgrading with EE1st would be possible (some skepticism)

Spain: “Housing rehabilitation programme for economic and social recovery in residential environments”

- Generous, requirements in primary energy level reduction
- Improved indicator is needed (FE) + identification of depth of improvement

PREE: differentiated rates encourage more complex renovation

Hungary:

- A number of RES grants since 2019.
- Stand-alone grants that often lead to oversizing: opportunity to set-up requirements.
- BUT: too complicated + need for monitoring and evaluation

Design needs for fabric first implementation

How:

- Integrate requirements into (often existing) grant/loan instruments
- Need for additional measures (one stop shop, campaign + advice, training of construction sector)

Challenges:

- More complicated for applicants (fewer applications)
- Need for transparent monitoring (capacity and methods problems) and more challenging decision on winners

Benefits:

- Better use of public funds,
- Avoid lock-in,
- More significant help for vulnerable citizens.

Digital building logbook

Flemish Energy Agency (VEA): Renovation Pact (2014-2018), to improve the energy performance of the region's overall building stock:

- Woningpas (the building logbook)
- EPC+

Woningpass gives transparent information to the owner/tenant on:

- current energy performance,
- registry of the efficiency measures undertaken so far,
- roadmap for improving energy performance, including costs of alternatives.

The building logbook puts efficiency measures before renewable energy measures.

Replication opportunities and design needs




Germany:

building renovation passport (“individueller Sanierungsfahrplan”)

France: “EFFICeat

Other registries: Portugal, French regional administrative units,
Denmark, Ireland, Hungary (EPC)

Implementing EE1st: extended list of measures

		Energy system	District level	Building level
Regulations		integrated network/system planning + DR		passive level building codes, fabric first approach
Financial measures		integrated financial planning, Auctions	EnPC solutions	performance-linked subsidies
Assistance Info		central support and monitoring body	energy communities	one-stop shops and advisors, Planning instruments (logbook, building passports)

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

CONCLUSION

Operationalizing Efficiency First in the Member States:

- brings **efficiency solutions into the focus**, while
 - improves **policy and decision** making,
 - prepares a **better and more equal future** for all,
 - integrates **external costs and co-benefits**.

However due to large differences across countries and regions, a **flexible framework** is needed.



Thank you

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 839509. The sole responsibility for the content of this presentation lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.