

Conceptualizing the “Energy Efficiency First” principle: from foundations to implementation

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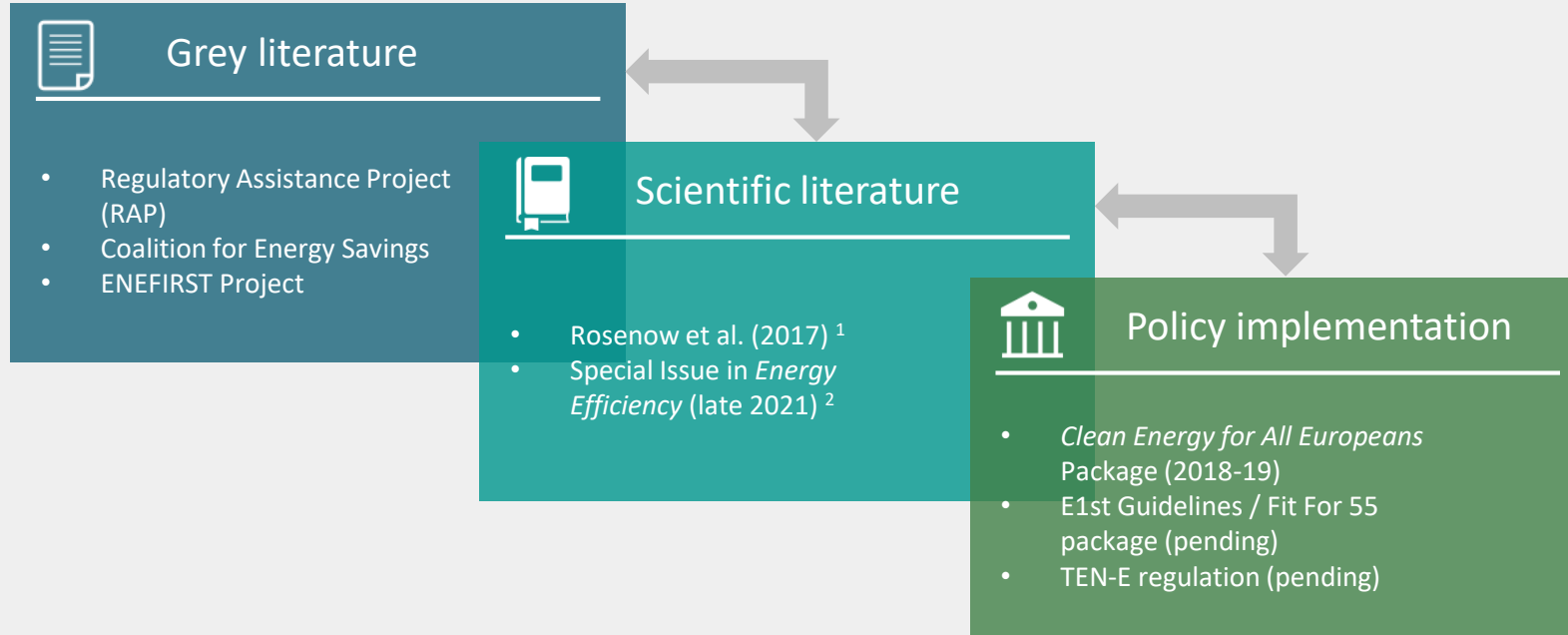
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A person in a blue suit is shown from the chest up, holding a glowing, translucent blue orb in their right hand. The background is a dark blue with a complex network of white dots connected by thin, glowing blue lines, resembling a molecular or digital structure. The overall lighting is cool and futuristic.

MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL

Energy Efficiency First (E1st) | Where are we standing?

E1st is well established in grey literature, but not (yet) in scientific literature and policy.



¹ Rosenow, Jan; Cowart, Richard; Bayer, Edith; Fabbri, Mariangiola (2017): Assessing the European Union's energy efficiency policy. Will the winter package deliver on 'Efficiency First'? In *Energy Research & Social Science* 26, pp. 72–79.

² Special Issue "Making the Energy Efficiency First Principle Operational"

Objectives of my presentation

From foundations to implementation...



Agenda



01 | What exactly does E1st mean?

Suggesting a modified definition as a counterpart to the official one



02 | How does E1st differ from related planning concepts?

Comparing E1st with Least-Cost Planning (LCP), Integrated Resource Planning (IRP), et al.



03 | Why is efficiency currently not “put first”?

Reviewing the principle’s economic foundations



04 | What are possible avenues for E1st in the EU?

Presenting two policy frameworks to systematically put E1st in practice

01 | What exactly does E1st mean?

The ENEFIRST project defines « Efficiency First » (E1st) as follows:



‘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.



01 | What exactly does E1st mean?

E1st is about selecting a least-cost portfolio of “resources” to meet society’s needs.



03 | Why is efficiency not “put first” in Europe?

Three concepts help explain the suboptimal adoption of energy efficiency measures

Concept	Market failures	Regulatory failures	Behavioral failures
Research object	Markets	Monopoly companies (TSOs, DSOs, district heating,)	Individual / (corporate) decision-makers
Description	Market properties that violate (neoclassical) assumptions about ideal markets	Regulated companies do not produce socially desirable outcomes	Systematic biases in observed consumer decision-making that are inconsistent with standard assumptions of rational choice
Examples	Externalities, imperfect competition, average-cost pricing, etc.	Rate-of-return incentive, throughput incentive, etc.	Loss aversion, decision heuristics (“rules of thumb”), limited attention, etc.
Policy responses	Emissions pricing, market access rules, Time-of-use tariffs, etc.	Revenue cap regulation (“decoupling”), TOTEX remuneration, performance criteria, etc.	Targeted awareness campaigns, energy savings insurance / liabilities, etc.

04 | What are possible avenues for E1st in the EU?

Two frameworks can help conceptualize policymaking for E1st

	Centralised planning framework	Decentralised market-based framework
Objective	Prioritize demand-side resources whenever they are more beneficial for society than investments in energy infrastructure	
Actors	Regulated network companies, policymakers, public institutions	Consumers and producers in various markets for energy services
Investment rationale	Societal perspective (maximise benefits for society as a whole)	Private perspective (maximise private benefits)
Policy scope	Addressing regulatory failure + misc. topics	Addressing market failure and behavioural failure

Conclusion

Conceptualizing the “Energy Efficiency First” principle: from foundations to implementation



01 | What exactly does E1st mean?

- Select portfolio of resource options that provides greatest value to society
- Not the same as classic energy efficiency policy



02 | How does E1st differ from related planning concepts?

- Concepts share goal of establishing cost-optimal balance of resource options
- Concepts differ in terms of (i) scope energy carriers, (ii) timeframes, scope of multiple impacts



03 | Why is efficiency currently not “put first”?

- E1st is new, but its theoretical foundations are present in the literature
- Market, behavioral, and regulatory failures provide the economic rationale for government action in the context of E1st



04 | How to move on with E1st?

- Centralized approach | Guidelines, obligations, and incentive structures as key instruments to drive E1st for regulated monopoly companies
- Decentralized market based approach | Resolve market and behavioral failures in various markets for energy services