Wuppertal Institut

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The Energy Efficiency First Principle and the Role of Evaluation

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What is the energy efficiency first principle (EU context)?

- **The EU definition: Governance regulation, Art. 2 (18)**
  - ‘energy efficiency first’ means taking utmost account
  - in energy planning, and in policy and investment decisions,
  - of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient,
  - in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy,
  - whilst still achieving the objectives of those decisions

What is the energy efficiency first principle (EU context) (2)?

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- **The policy requirement for EU Member States: EED Art. 3 (1)**
  - In accordance with the energy efficiency first principle, Member States shall ensure that energy efficiency solutions, including demand-side resources and system flexibilities,
  - are assessed in planning, policy and major investment decisions of a value of more than EUR 100 000 000 each or EUR 175 000 000 for transport infrastructure projects,
  - relating to the following sectors

    (a) energy systems; and

    (b) non-energy sectors,

    where those sectors have an impact on energy consumption and energy efficiency such as buildings, transport, water, information and communications technology (ICT), agriculture and financial sectors.

What is the role of evaluation?

- "Taking utmost account … of alternative cost-efficient … measures" **clearly implies the use of evaluation methods**
- So **which purposes or objectives does evaluation need to pursuit?**
- This will determine, **which kinds of methods** may be needed

  - Note: Energy efficiency first (EE1st) principle bears significant similarity to the principles of **Integrated Resource Planning or Least-Cost Planning** developed in the USA and other regions in the 1980ies.
  - Major difference: EE1st principle covers not only planning and investment decisions, but also policy decisions.
  - In addition, it covers all forms of energy and all energy end-use sectors

What is the role of evaluation?

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- **Our suggestion: Three key roles for evaluation in the application of the principle**

1) Most important role: assessment of the **cost-efficiency** and **reliability** of alternative energy efficiency measures

- **Measures** depend on **type of decision** (policy, planning, major investment)
- Measures could be either **programmes** or single **investments** to
  - **reduce energy consumption** through energy efficiency
  - **better match the supply and demand** of energy, particularly electricity
- **Methods: ex-ante impact/summative evaluation** of
  1) **potential** energy savings or changes in load profiles
  2) **benefits and costs**, and the wider benefits (multiple impacts)

What is the role of evaluation?

- **Our suggestion: Three key roles for evaluation in the application of the principle**

1) Most important role: assessment of the **cost-efficiency** and **reliability** of alternative energy efficiency measures

› **Energy efficiency as a resource:**

- must provide the energy services (buildings, production, security of supply, etc.) with the **same reliability** as enhanced energy supply/infrastructures
- **much more reliable prediction** of achievable impacts needed
- Much better **evaluation of evidence from previous**, similar measures or pilot projects

What is the role of evaluation?

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- **Our suggestion: Three key roles for evaluation in the application of the principle**

2) evaluation of whether the alternative measures are **delivering as expected**

- **both** process/formative and ex-post impact/summative evaluation;
- **not much different** from usual process and ex-post impact evaluations of EE measures,
- **except** if default infrastructure option to be replaced or deferred is an **upgrade of the grid** => local/regional impact on peak hour load deserves special attention in the evaluation
- **results can be used** to
  - improve measures during their implementation
  - as a source of evidence for future ex-ante analysis in applications of the EE1st principle, under the first role of evaluation

What is the role of evaluation?

- **Our suggestion: Three key roles for evaluation in the application of the principle**

  3) evaluation of **policy design**:

  - whether a policy **might create or mitigate bias** against energy efficiency in investment decisions
  - policies should address possible misalignments between **individual investor's and society's perspectives**
  - => evaluation of **benefits and costs**, and the wider benefits (multiple impacts) from both perspectives

Will application of the principle improve policy evaluation?

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- In the past, **EU policy evaluation focused on energy savings and** the corresponding **greenhouse gas emissions reductions** in relation to policy targets, but not always on cost-effectiveness, particularly from the societal perspective

  Expected changes from application of the EE1st principle:

  - greater emphasis on **costs and benefits**, including wider benefits (multiple impacts)
  - and both the individual **investor's and society's perspectives** through evaluation's roles number 1) and 3),
  - plus **reliability** of achieving energy savings and/or changes in load profiles through implementing energy efficiency measures, in evaluation's roles number 1) and 2).

In a nutshell

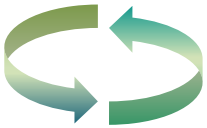
1

Provide public authorities and other stakeholders with **hands-on resources to implement EE1st**

2

Demonstrate how EE1st can be implemented with **pilot cases in 4 countries**

- Transmission grid planning
- Heating & cooling plan
- SECAPs
- Electricity tariffs



3

Learning cycles for knowledge and resources on EE1st

4

Grow a **community of practice**, + open forum for practical discussions about EE1st

EE1st in practice:
examples of questions from stakeholders about implementing the principle

Impossible to assess and compare everything → need to be pragmatic vs. risk of biased assessment (e.g. designed to confirm beforehand decision)

How many options should be considered in the assessment?

How many different impacts should be considered?

How may EE1st make a difference in the final decision?

→ Clear role of evaluation to implement EE1st as an iterative process

Upcoming online events

Wed 1 Oct.

Plugging Energy Efficiency First **in SECAPs**: Why and How

(based on Italy's pilot case)

10:00 – 11:30 CEST | Online

Wed 8 Oct.

Plugging Energy Efficiency First **in Electricity Tariffs**: Why and How

(based on Poland's pilot case)

12:30 – 14:00 CEST | Online

All details at: https://**ee1st.eu/events/**

Questions for the discussion

1) What do you see as the relevant and most important role(s) of evaluation in the application of the principle? (ex ante, ex post)
   (How) Does it differ between planning, policy, and investment decisions?

2) a) How important is a reliable ex-ante quantification (‚prediction') of impacts on energy savings and reduction of the load at peak hours to ensure acceptance of giving priority to energy efficiency (even if it is cost-efficient)?
   b) How can we ensure greater reliability of the quantification and trust in it?
   What should policy-makers like the European Commission do in this regard?

3) How can we ensure to include the (multiple) wider benefits in the evaluation?

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Thank you very much for your attention

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