

Barriers and success factors to Energy Efficiency First implementation in buildings and related energy systems

Expert Online Workshop | Thursday 15 April 2021

Discussion group on Buildings

Minutes

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INTRODUCTION

The [ENEFIRST](#) project aims to support the implementation and operationalisation of the Efficiency First (E1st) principle across EU legislation with a **special focus on buildings and the related energy systems**. Previous work of the project [defined the E1st principle](#) in practical terms, collected international experience in the form of [16 case studies](#) and analysed their [transferability to the EU policy framework](#) as well as the [main barriers to a broad implementation of E1st](#) across sectors. The project also looks at [modelling approaches](#) to assess the impacts from implementing E1st.

On the part of policy analysis, we identified priority policy approaches that can translate the E1st principle in policy areas relevant to the EU building sector ([ENEFIRST \(2021\)](#)). The screened policy areas cover buildings, power markets, gas markets, energy efficiency, climate policy, and heating and cooling.

In a next step, we **identified barriers and success factors** specific to these priority policy approaches which will be visualised in implementation maps to inform policy makers and other stakeholder groups and help to make the E1st principle operational.

A consultation workshop was held on 15 April 2021, with the **objectives** to:

- Present policy approaches to implement E1st in buildings and related energy systems;
- Receive feedback and validate the identified barriers & success factors; and
- Rank the factors in terms of what recommendations / efforts should be focused on, to get E1st implemented in practice.

The workshop included three breakout groups: buildings, power sector and district heating. The policy approaches discussed in the break-out group on buildings were:

- Fabric first approach;



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- Financial incentives for RES linked to energy performance;
- Planning instruments for investments in buildings.

Generally, there was a broad understanding that the previously identified barriers are indeed relevant for implementing the E1st principle. On a general note, the national level (national energy and climate plans, NECPs) and regional planning was emphasised as a current barrier due to a lack of guidelines but also the level at which E1st can be successfully implemented. It was agreed that more specific guidance is needed from EU level but that there needs to be close cooperation between national and regional level regarding the specific implementation of E1st measures.

The discussion also raised the issue of E1st implementation on a district level which is important to keep in mind for energy planning on district level and building regulations that might go beyond the individual building.

After summarizing the main discussion points on each policy approaches, the results of the voting part of the session are presented.

1 FABRIC FIRST APPROACH

A fabric first approach in building design and renovation prioritises the improvement of the energy performance of the components of the building fabric before considering the new installation or improvement of mechanical and electrical building services systems (such as heating systems) in order to achieve high energy efficiency buildings. A fabric first provision can be included directly in building regulations or can become a requirement in – for example – subsidy schemes. The approach may regulate new and/or existing buildings.

Table 1. Overview of barriers, success or enabling factors related to the fabric first approach.

| Barriers to implementing E1st | Success or enabling factors to overcome the barriers |
|--|---|
| More demanding requirements leading to less applications for a 'fabric first' subsidy scheme | Established experience in designing and administering financial/fiscal support schemes |
| Lack of a reliable framework to set the minimum requirements | Well-established and recognised framework to define energy performance of buildings (e.g., reliable scheme for Energy Performance Certificates) |
| Higher total investment costs due to the fabric first requirements | Similar technical or administrative requirements across assistance and subsidy programmes (and thus reducing transaction costs) |
| Resistance from manufacturers and installers | Experienced and trained contractors and building professionals |
| "Silo thinking" and lack of cooperation in professional cultures in building and construction industry | Support to the cooperation between building trades and energy advisors |
| Lack of knowledge/ awareness about multiple benefits of improving the fabric | Availability and promotion of best practice case studies |
| Lack of expertise/ guidelines to achieve minimum energy performance requirements without using mechanical services or systems (e.g. heat pumps, solar PV etc.) | Bridges between industry players (e.g. manufacturers and installers) and markets (e.g. social housing and grant scheme managers etc.) |
| Multiple benefits difficult to quantify and build systematically in policy decisions | Communication and awareness campaigns on lifecycle cost and multiple benefits of the fabric first approach |

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|--|--|
| Lack of schemes to value the multiple benefits in the business cases either at macro or micro levels | Requirement for minimum energy performance level |
| Difficult to quantify the impacts in terms of energy consumption/GHG reduction | Acknowledgement of improving wider benefits through tax revenue or similar schemes by the state |
| Lack of information for consumers regarding energy efficiency products and related energy operating costs | Coherence of building shell priority measures over RES measures in national funding schemes |
| Uncertainty whether the expected energy performance level will be achieved in real life | Performance (energy/comfort)- based approaches and standardisation of works |
| In Renovation: Complexity and variety of building types and uses, which are not directly approached via a general policy. | |
| Long payback time | |
| Quality issues at the interface between renovation measures leading to lower energy perf. and higher costs | |
| Lack of standardisation which could reduce costs of energy diagnosis, implementation (by capitalizing on the learnings), | |
| Vested interest of traditional energy market players, afraid of loss of market share due to EE | |

Note: Factors in bold were added by workshop participants.

Regarding the fabric first approach, the participants put an emphasis on the importance of multiple benefits and stressed the difficulties of their quantification and structured consideration in business cases on the micro and macro level. Also, a reliable energy performance measurement after renovations by real energy consumption monitoring to ensure the full exploitation of efficiency first was mentioned several times. Performance (energy- or indoor environmental quality (IEQ/) comfort) based schemes could support an implementation of the fabric first approach.

Key messages:

- Clear alignment with NECP and LTRS
- Performance based approach for building renovation schemes
- Quality assurance (upskilling of building professionals, quality standards)
- Guidelines for including multiple benefits

2 FINANCIAL INCENTIVES FOR RES LINKED TO ENERGY PERFORMANCE

Financial support schemes for building integrated renewable energy installations should be subject to predefined energy performance levels or energy efficiency standards of the related building. This would ensure a priority for demand-side measures, and the energy supply would be sized adequately, increasing the systemic efficiency, too. All in all, financial incentives would impact in front of the meter solutions, and/or to avoid lock-in effects.

Table 2. Overview of barriers, success or enabling factors related to the financial incentives for RES linked to energy performance.

| Barriers to implementing E1st | Success or enabling factors to overcome the barriers |
|---|---|
| Complex and more technical application process | Energy performance certificate (EPC) scheme with high quality and comparability |
| Long evaluation process for financial support | Sufficient number of EPC assessors or energy advisors |
| Lack of sufficient energy efficiency experts (e.g. EPC auditors) for the pre-assessment of the buildings' energy performance | Simple and transparent subsidy application process |
| Low quality of the national EPC scheme or other monitoring framework | Additional financial support for the pre-assessment/ EPC issuing process or possible energy efficiency interventions |
| Costs for pre-assessment/ EPC issuing and possible related energy efficiency improvements | Reliable information about the benefits of integrating energy efficiency and RES |
| Lack of awareness or interest of an integrated approach (EE+RES) | Incentives for RES always linked to the improvement of rating performance |
| Financial incentive for RES can compete with incentives for EE | Align Article 7 with E1st |
| Promotion of RES because E1st couldn't be aligned with article 7 | Strategic planning within NECP and national planning |
| Contractors are the main source of information to households. While they know their job well, they are unable to advise on integrated approaches and often provide contradictory information | Acknowledgement of the wider benefits through tax revenue or similar schemes by the state |
| Unsatisfactory information or advice related to integrated approaches and/or provision of contradictory information | Defined long-term consistency of financial support |
| | Customer information campaign/consulting on the proper order of measures (renovations first, RES 2nd) |
| | Performance-based approaches (not available in private residential) to allow the mobilization of private investments |

Note: Factors in bold were added by workshop participants.

Participants agreed that vested interests and – so-called - "silo" thinking among professionals and contractors, as well as policy makers that are focused on renewable energy source measures, and those in the energy efficiency domain makes it difficult to make informed decisions on the selection of measures. In the context of EU level policies, the opportunity of linking Article 7 of the EED regarding energy savings obligations (EEOs) with E1st more explicitly was mentioned.

For this policy approach, reliable information specifically explaining the relationship of demand-side and supply-side measures on the consumer/owner level is especially critical in order to avoid oversizing and lock-ins that can affect the energy performance of buildings for decades. The workshop discussion indicated that the individual building level is the most relevant when looking at barriers to implementation of this approach.

Key messages:

- Over-coming silo thinking is crucial to implement E1st;
- More information and expertise on integrated approaches needed;
- Awareness raising campaigns about order of measures for end-users could help implement E1st (incl. multiple benefits).

3 PLANNING INSTRUMENTS FOR INVESTMENTS IN BUILDINGS

Buildings have a long lifecycle and are only renovated at certain intervals which makes them prone to lock-in effects and stranded assets if the renovation is not done considering all energy saving solutions. Buildings are also closely connected to the energy system as a whole and involve a variety of stakeholders (owners, tenants, contractors, manufacturers/ installers, financing institutions, municipalities). Planning instruments and services can implement the E1st principle by through facilitating the comparison of renovation scenarios or patterns, prioritising demand side measures, making the process of renovation easier, more transparent and more efficient.

Table 3. Overview of barriers, success or enabling factors related to planning instruments for investments in buildings.

| Barriers to implementing E1st | Success or enabling factors to overcome the barriers |
|---|--|
| Lack of knowledge or vested interests of building professionals regarding different options for implementing renovation measures regarding E1st. | Providing information on the E1st principle, how it can be implemented in the planning tools and what are its benefits (including multiple benefits) |
| Lack of awareness of building owners about planning tools | Information for market actors about the added value of the planning tools for buildings, and about the opportunities of cooperation between building trades |
| Low diffusion of building logbooks or similar tools, and lack of incentives to use them | Ensuring that the planning tools are enabling fair comparisons of renovation scenarios that include scenarios prioritizing the improvement of demand-side savings (e.g. the building envelope) in the renovation patterns. |
| Financial schemes not linked to planning tools | Aligning financial instruments with the E1st principle |
| Lack of sufficient energy efficiency experts (energy auditors) who can conduct high quality assessment of the building's energy performance and integrate the E1st principle in the recommendations | Good practice examples |
| Lack of comparable, high-qualitative EPC schemes in all Member States as a basis for building performance assessment | Clear guidelines for integrating the E1st principle in Building Renovation Passports and Digital Building Logbooks as foreseen under the Renovation Wave |
| Extra cost of the planning analysis | Guidance for the Multi Annual Financing plans and Recovery Fund |
| Guidance for the Recovery Plans missing | (mandatory?) planning at the scale of district for holistic evaluation of demand side and supply- side investments, in EE, RES and flexibility |
| Just Transition plans as a corridor for fossil fuels/ natural gas new grids for heating in buildings | Improved planning instruments (e.g. implementing Wider benefits) need to fit into existing planning frameworks, without much extra effort of complexity. Especially for public authorities |
| Lack of incentives for deep renovation as part of funding schemes | |
| Lack of building owner s' long term view and financial resources to engage for a step-by-step complex renovation process | |
| Lack of reference to financial instruments | |
| Lack of consistent and up-to-date information | |
| Why would be home-owners engage in deep renovation if funding (grant) is available for individual energy efficiency measures | |

Note: Barriers, success or enabling factors in bold are the ones added by the participants during the workshop.

The discussion around project planning tools evolved towards the barriers and success factors of rolling out more deep renovation, instead of explicitly discussing barriers to E1st implementation in planning tools. There was a consensus that a key barrier is the decision making of homeowners and the lack of knowledge on the benefits of deep renovation and a lack of financial incentives to facilitate deep renovation instead of individual measures. Planning tools can offer a solution to bring deep renovations forwards by giving advice to homeowners and providing information on benefits of renovation measures as well as funding opportunities.

Two new interesting success factors were introduced: on one hand (mandatory) planning at the district level, which could increase flexibility and the other was streamlining new planning instruments with existing planning frameworks, in order to ensure an easy adaptation.

RANKING

The workshop participants were requested to rank the collected barriers and indicate which ones they considered as most critical to address for a successful implementation of E1st. We present the results of the voting below (Note that each participant had 9 votes to distribute and displayed are the number of votes per barrier):

| Fabric first | | Financial incentives for RES linked to energy performance | | Planning instruments for building renovation | |
|--|---|--|---|---|---|
| 'Silo-thinking' and lack of cooperation in construction industry | 7 | Low quality of national EPC scheme of other monitoring framework | 5 | No incentives build into funding schemes | 6 |
| Lack of a reliable framework | 7 | Lack of awareness or interest of an integrated approach (EE+RES) | 4 | Financial schemes not linked to planning tools | 4 |
| Lack of schemes to value the multiple benefits in business cases | 7 | Financial incentive for RES can compete with incentives for EE | 3 | Lack of knowledge of building professionals regarding different options of renovation measures | 4 |
| Lack of knowledge/awareness about multiple benefits of a fabric first approach | 7 | Promotion of RES as E1st could not be aligned with Article 7 EED | 3 | Lack of comparable, high-qualitative EPC schemes in all MS as a basis for building performance assessment | 3 |
| Long pay-back time | 3 | Lack of sufficient energy efficiency experts for the pre-assessment of the building | 2 | Extra cost for the planning analysis (energy audit) | 2 |
| Quality issues | 3 | Costs for pre-assessment/EPC issuing and possible related energy efficiency improvements | 2 | Lack of building owners' long-term view and financial resources to engage for a step-by-step complex renovation process | 2 |

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| Multiple benefits difficult to quantify | 3 | Lack of capacity of contractors to provide adequate information to private homeowners (integrated approaches) | 2 | Lack of awareness about planning tools (perspective of the building owner) | 2 |
| Uncertainty whether the expected energy performance level will be reached | 2 | Complex and long approval process for subsidies | 1 | Guidance for the Recovery Plans missing | 2 |
| Higher total investment costs per renovation project | 2 | Complex and more technical application process | 1 | Just Transition Plans as a corridor for fossil fuels/ natural gas new grids for heating in buildings | 2 |
| Lack of standardisation | 2 | | | Lack of reference to financial instruments | 1 |
| Lack of expertise to achieve minimum performance requirements without using mechanical building services or systems | 1 | | | Lack of sufficient energy efficient experts to conduct the buildings' energy performance assessment | 1 |
| Complex and long approval process | 1 | | | | |

The ranking results show that the fabric first approach, the first policy approach discussed in the breakout-group, received most attention and possibly therefore also the most votes (bias in distributing the votes).

The four barriers that were **ranked highest (7 votes each)** belong to the fabric first approach:

- ‘Silo-thinking’ and lack of cooperation in construction industry
- Lack of a reliable framework
- Lack of schemes to value the multiple benefits in business cases
- Lack of knowledge/ awareness about multiple benefits of a fabric first approach

It should be noted that these barriers are also applicable to the other E1st policy approaches as they refer to general barriers to prioritising energy efficiency improvements of the building envelope.

From the above, general cross-cutting aspects shine out, which should be addressed to realise the implementation of E1st in the building sector:

- Capacity building on integrated approaches of energy efficiency improvements and renewable energy installations (resolving ‘silo-thinking’ of and a culture of a lack of cooperation between building trades and EE and RES);
- Awareness raising and structured approach to multiple benefits in investment decisions;
- Performance-based interventions to ensure a high quality of renovation measures;
- A reliable framework to monitor the energy performance of buildings (high-quality EPC scheme or others);
- Financial schemes implementing E1st.