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Training Programme:

Barriers to energy renovations

Topic IV

Co-funded by the European Union

Definitions

Barriers refer to the challenges or factors that hinder the implementation of energy retrofit projects in buildings.

Barriers can exist at different levels, such as individual, organisational, social, and economic, and may vary depending on the specific context, including country, region, or building type.

Understanding and addressing these barriers is essential to increase energy upgrades!

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Barrier categories

- Economic
- Lack of information and knowledge
- Organisational and decision-related
- Institutional
- Technical
- Behavioural

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Economic barriers

- High investment costs for deep renovations.
- Long payback periods for energy-saving measures, limited access to finance
- Reluctance of traditional lenders (banks) to provide loans for renovation projects.
- Reduced availability of subsidies.
- Risk of 'free consumption' in subsidy schemes.
- Not always a significant increase in the value of the asset due to energy efficiency improvements.
- Energy pricing that does not fully reflect negative externalities.
- Lack of economies of scale and maintenance needs (especially for RES).

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Economic barriers

Examples

- The economic benefits of energy efficiency renovations are often underestimated over time.
- The uncertainty and risk associated with long-term investments.
- The reduction in bank loans is affecting investment in this sector.
- Declining incomes and changes in consumption habits due to the recession give lower priority to energy efficiency renovations.
- Due to their very low income, most of the time, vulnerable households do not have access to loans from commercial banks.

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Lack of information and knowledge

- Lack of understanding of the benefits of energy upgrading.
- Technical complexity and terminology - limited access to clear, accurate, and unbiased information from reliable sources.
- Lack of reliable and accessible tools and databases.
- Lack of easily accessible and up-to-date information on energy efficiency programmes, incentives, and financing.
- Conflicting advice and outdated guidelines.
- Difficulty in calculating costs for new technologies (for contractors.

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Lack of information and knowledge

Examples

- Lack of skills and training among professionals responsible for implementing energy renovation projects.
- Insufficient knowledge of energy-saving technologies and renewable energy sources.
- General information that is not adapted to the specific circumstances of each user, which makes it difficult to assess the overall benefits of energy efficiency investments.

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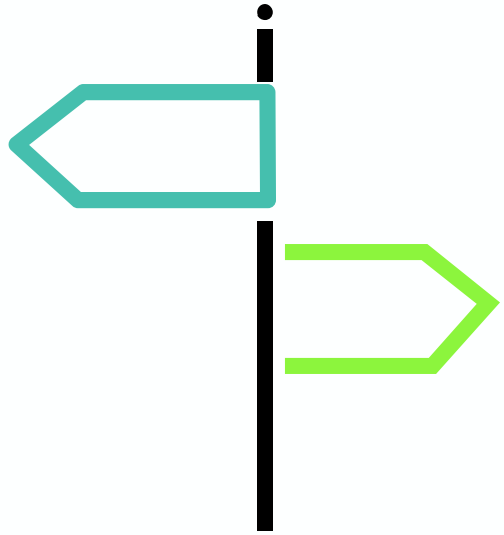
Organisational and decision-related

- Difficulties in decision-making and coordination for complex ownership structures.
- Delays and abandonment of projects due to disagreements and a lack of accountability.
- Complex legal issues and uncertainties.
- Lack of standardised procedures.
- Conflicting interests in rental housing.
- Limited participation of small and medium-sized technical enterprises.
- Fragmentation of the supply chain in the construction sector.



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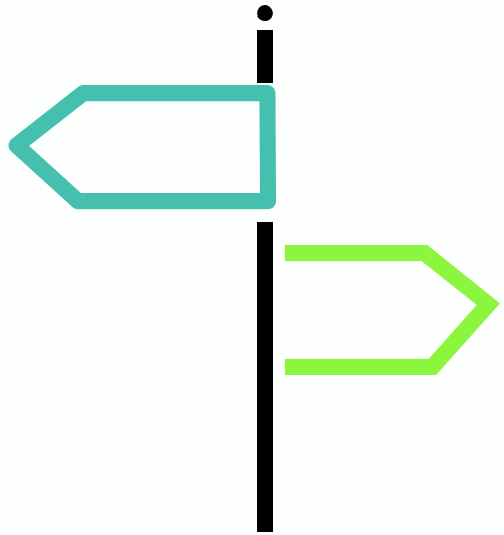
Organisational and decision-related-Examples

Examples

- Many vulnerable households live in homes that they do not formally own, e.g., they may belong to parents who have died but have not inherited them for financial reasons (inheritance taxes have not been paid). Therefore, they are not eligible for subsidies from government programmes.
- In many blocks of flats, there is no agreement to upgrade the energy efficiency of the whole building.



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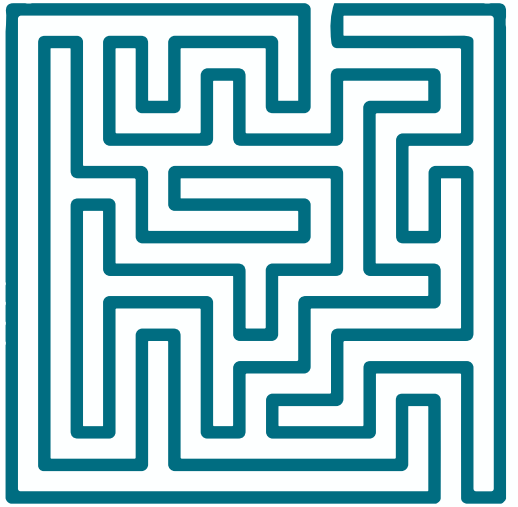
Institutional barriers

- Complexity of rules and regulations at the EU and Member State levels.
- Inconsistencies, delays, and gaps in energy efficiency targets, performance standards, etc.
- A one-size-fits-all approach that overlooks specificities.
- Unclear and ineffective national strategies.
- Lack of common definitions.
- Uncertainty due to frequent changes in regulations.
- Inadequate monitoring and enforcement.
- Excessive administrative burden.
- Inconsistent standards and labelling requirements.
- Inadequate government subsidies and programmes.



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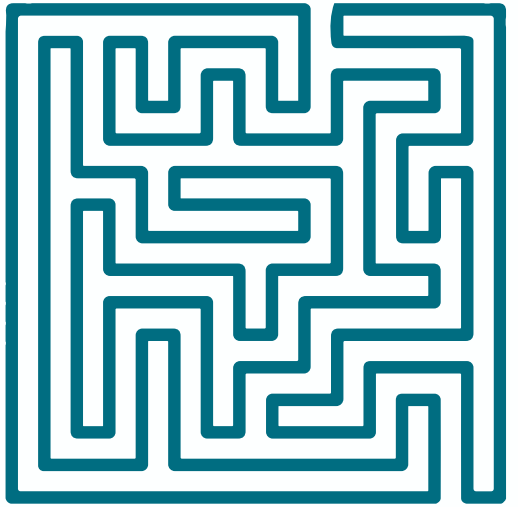
Institutional barriers- Examples

Examples

- Greece does not have an established national standard for the accurate measurement of the actual energy consumption of buildings.
- The resources available through the financial support programmes are not sufficient to cover the needs of vulnerable households, and the criteria set are practically prohibitive for truly vulnerable households.



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Technical barriers

- Lack of skilled professionals and trained workforce.
- Lack of examples of successful deep renovation projects.
- Lack of standardised solutions and evaluation tools.
- Differences between projected energy savings and actual performance.
- Concerns about maintenance, durability, and long-term performance of retrofit systems.
- Complex integration of new solutions with existing infrastructure; limited availability of energy-efficient materials and components.
- Safety and seismic risks associated with deep renovation processes.

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Technical barriers

Examples

- Technical constraints, such as architectural and infrastructure access issues, common heating systems, and outdated regulations in apartment buildings.
- Inadequate supply chains for renovation services, lack of energy labelling and certification systems for building materials, and inadequate technical support.
- Absence of meters or direct mechanisms for reporting energy savings from renovations

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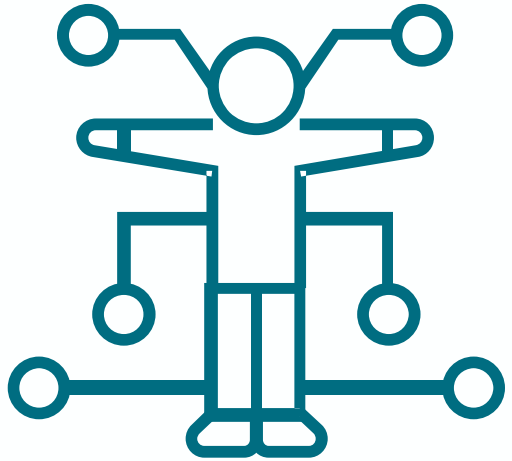
Behavioural barriers

- Resistance to change and comfort with existing routines and habits.
- Limited motivation and lack of personal benefit from energy upgrades.
- Perception of renovation as a complex and irreversible undertaking.
- Lack of a 'savings culture’.
- Limiting social norms.
- Lack of trust in authorities, institutions, or contractors.
- Uncertainty about functionality requirements.
- Lack of consumer acceptance of new technologies.
- Disruptive factors such as noise and dust or the need to move during renovation works; - Differentiated attitudes towards renovation based on factors such as age, gender, education, and cultural values, etc.



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Behavioural barriers

A more detailed report on the behavioural barriers of vulnerable households...

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Why are there difficulties

In addition to economic problems, vulnerable households (but not only) do not operate according to the model of Homo Economicus, i.e., a rational being who seeks to maximise individual well-being, compares costs with benefits and weighs return with risk in a "perfect" way, taking into account all available information on alternative options - they are far from the "rational" economic model.

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Decision-making

In individual decision-making, two systems guide the way of thinking:

System 1

- fast, intuitive, and emotional;
- operates automatically, quickly, and largely unconsciously, with little or no effort and no sense of voluntary control.

System 2

slower, prudent, and rational;

requires concentration, application of specific rules, and strenuous mental effort.

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Decision-making under poverty conditions

- The constant stress of poverty prevents consumers from making the best decisions!
- This paradoxical phenomenon is referred to in the international literature as the “Irony of Poverty”: people living in poverty are called upon to make more "right" decisions, as the slightest mistake is going to have a decisive impact on their living conditions. But these same people are in the most difficult position to make.
- Under stress, System 2 is busy or tired, and System 1 has more influence on behaviour.

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Main cognitive biases

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Loss Aversion

- Most people evaluate gains and losses differently. This phenomenon is known as “Loss Aversion”.
- The feeling of bitterness caused by the loss of a certain amount is greater than the satisfaction caused by gaining an equivalent amount. The loss aversion coefficient is approximately 2, meaning that the pain of losing an amount **X** is about twice as intense as the pleasure of gaining the same amount.

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Loss aversion

- The financially vulnerable may be driven to take risky decisions to avoid any further loss.
- Fearing higher bills, vulnerable households are reluctant to switch suppliers even if the price offered is lower or to invest in energy-saving measures.

Vulnerable households tend to be loss-averse but not risk-averse!
The financially vulnerable tend to overcome their risk aversion if an option is presented as a proposal to avoid further loss rather than a profit proposal…

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Present bias

- We often display a strong attachment to the present, which leads to an overestimation of the present condition and an underestimation of a future situation, because human nature finds it difficult to change behaviour and expectations based on a future self.
- Present bias occurs as the tendency to value more highly a smaller but immediate reward over a larger, future reward, downplaying or completely overlooking the long-term adverse consequences of present choices or decisions.

This behaviour is referred to as ‘myopic' and results in ignoring the future consequences of a current decision.

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Status quo bias

- Changes usually cause people to feel insecure, resulting in an underreaction to new stimuli or information.
- Status quo bias describes the tendency of people to want the status quo to remain unchanged, regardless of its functionality and at the expense of alternatives.

The bias of the status quo is related to

- The **Omission Effect** describes the tendency of people to judge harmful acts as worse than omissions with a similar harmful effect.
- The **Repentance Avoidance** is an emotion associated with hindsight, i.e., that a different past decision would have had a better outcome than the one chosen, leading to a sense of responsibility for the wrong choice.

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Status quo bias

Vulnerable households

- tend to prefer the status quo, despite its problems, and at the expense of alternatives;
- have a sense of futility that nothing is going to change decisively in their lives, no matter what they do;
- feel more pressure, compared to financially comfortable households, to decide under the constant fear that a mistake might lead to a worsening of an already bad situation.

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Herding bias

- It is a psychological tendency of human nature and is based on the security people feel when acting in groups, similar to packs.
- This behaviour is based on heuristic rules, i.e., simplistic empirical ways in which the human brain tries to provide a quick solution to complex problems that require perception, understanding, and processing of information.
- One of the most powerful cognitive shortcuts is behaviour based on "**social norms**", i.e., individuals tend to adopt some action (or refrain from some action) depending on how popular it is with the majority of the world.
- Financially vulnerable people, as a consequence of constant stress, are more prone to this behaviour because of the constant stress and exhaustion they experience.
- In some cases, however, social acceptance often plays a deterrent role. To avoid being perceived as being in a financially vulnerable situation, for fear of social stigmatisation, economically vulnerable people seem to reject offers and measures of financial assistance, giving priority to avoiding social exclusion.

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Rational inattention

- When the information needed for a decision requires effort to obtain, individuals tend to make decisions based on incomplete information, rather than making an effort to obtain complete information.

- Another aspect of the problem relates to the tendency of individuals to inform themselves and spend time on areas that are a priority for them, to the detriment of other aspects of the problem.

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Rational inattention

Regarding vulnerable households

- In a study by Warwick, Harvard, and Princeton Universities, it was shown that the cognitive performance of individuals who faced financial difficulties in their daily lives was equal to the cognitive performance of individuals after a full night of insomnia.
- Other studies have found that cognitive performance declines by up to ten IQ points when respondents are in financially difficult circumstances.
- The decline in cognitive abilities is the result of working memory being occupied by current issues, and attention and concentration being focused on unsolvable financial problems **and is in no way a question of intelligence**.

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What can we do?

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Mitigation measures

To help economically vulnerable households make optimal decisions, it is necessary to

- Choose appropriate 'language', e.g., the use of financial amounts versus percentages, may also be more effective for vulnerable households who feel the need to fully understand the financial costs and benefits of the proposed options.

- Present proposals with an emphasis on harm reduction rather than benefit enhancement, as harm aversion is a greater deterrent to adopting new actions.

- Choose the appropriate timing of the intervention, e.g., it has been shown that financially vulnerable households show increased interest in proposals made immediately after, or a few days after, normal bill payment days.

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Mitigation measures

To help economically vulnerable households make optimal decisions, it is necessary to

- Select the maximum efficient ratio between price and accessibility of the service.
- Use an 'aggressive' policy, e.g., in a programme to assist economically vulnerable households in Malta, whereby, after completing an appropriate application, there were €500,000 worth of energy vouchers left unused each year. Without changing the selection criteria, the selection of the beneficiaries is carried out by the state services, and the vulnerable households simply receive the financial support.
- Use of the “Impulse theory”, i.e., motivation to specific behaviours and actions, without depriving the individual of alternatives or affecting his/her financial goals, mainly through subconscious influence, e.g., in our case, concerning the benefits of energy saving.

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Thank you!

Ekodoma

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