

## Household Energy Efficiency Measures

### Shortcomings and Opportunities

#### Keywords

- > Energy efficiency
- > Households
- > Buildings
- > Renovation
- > Policy instruments



Characteristic European mixture of old and new houses, renovated and dilapidated ones.  
(Photo: Emőke Péter)

# EUFORIE

European Futures for Energy Efficiency

EUFORIE  
Policy Brief

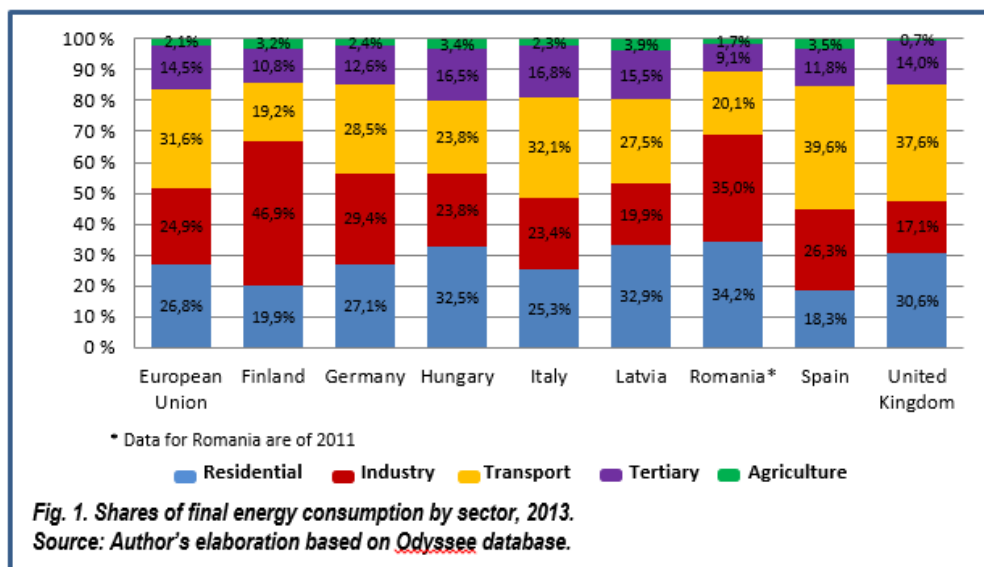
1

Revised  
January 2018

## Key Findings

Households are an important target for energy efficiency improvements, because energy consumption tends to continue in the residential sector (Fig. 1). The impact of energy efficiency policies depends not only on the local or national circumstances and the policy instrument mix chosen, but also on the process of instrument design and implementation. Here we list success factors, which help decision makers to effectively support energy efficiency in households.

ves) also to the existing building stock more widely might significantly enhance energy efficiency. Additional standards could be integrated as a necessary means to realise the Paris 2030 targets in the housing sector. They could include e.g. minimum solar contribution rules for hot water supply in new and renovated buildings, minimum photovoltaic contribution standards to electricity supply, plus rules and standards for other energy consuming equipment and processes affecting energy efficiency in households. Stakeholder participation in design



## Key policy implications

EU Directives are key policy tools for enhancing energy efficiency in the residential sector. Most Member States do not often make use of the possibility to set more ambitious targets; positive examples are Hungary, Italy, Spain, and Denmark. As the technically possible and environmentally desirable options improve (in particular after the Paris agreements), revising and sharpening the standards is advisable. Progressive development of the standards, with an early warning system to the economic agents, has been identified as the most effective way to achieve progress. Specific measures should be taken to improve compliance.

and implementation of policy measures helps public acceptance and easy implementation.

## Challenges

Using energy efficiency to enable lower energy prices, to pursue reduction of energy costs and to consider energy price as a competition factor generates incentives for consuming more energy. Economic instruments are often effective, but carry the risk of regressive effects. Enhancing monitoring programs is essential for effective compliance.

Another challenge of achieving improved energy efficiency in the residential sector is excessive administration and procurement procedures, which may lead to delays and increased costs.

## Opportunities

Designing and applying policy measures (standards, guidelines, financial incenti-



This project is supported by the European Commission Horizon2020 Research and Innovation Programme

# EUFORIE

European Futures for Energy Efficiency

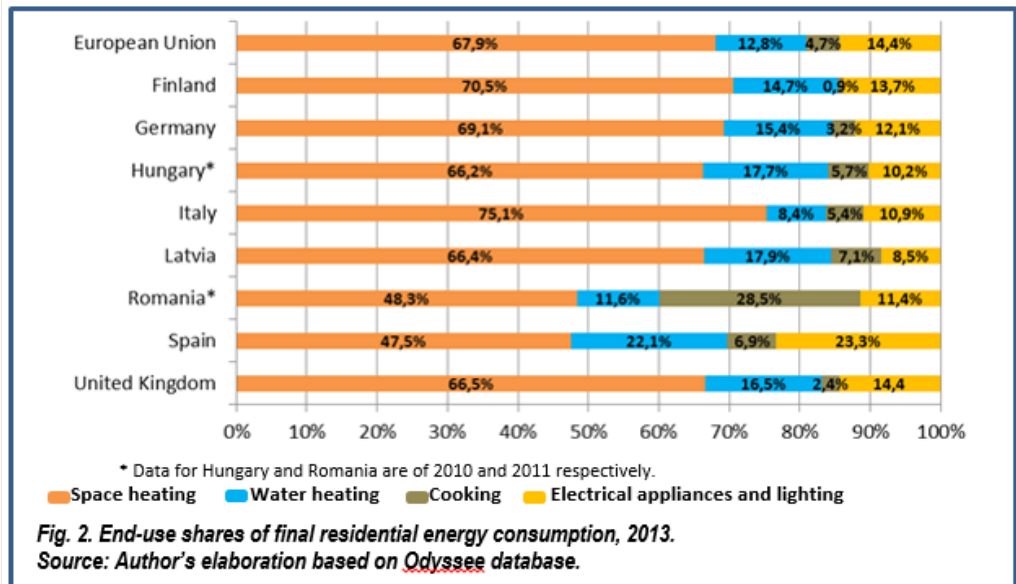
## Policy recommendations

### 1. A broad instrument mix

Major energy end uses in households include space heating, water heating, cooking and electrical appliances and lighting (Fig. 2). Using an instrument mix

### 3. Flexible economic incentives

Economic incentives should make investments profitable, but must be set in a socially responsible manner. They should be targeted at actions which are cost effective from a collective point of view (e.g. avoiding externalised cost), but



based on effectiveness considerations without ideological bias against specific instruments, with special emphasis on building energy codes, can have a significant effect on the improvement of residential space heating energy efficiency. The instruments include e.g. energy performance standards, minimum thermal insulation standards including glazing and airtightness, and standards for the efficiency of heating, cooling, ventilation, lighting and controls.

### 2. Sufficiently high energy price

High energy price has always been the best driver of energy efficiency. Sufficiently high energy price (by public intervention in case of collapsing World market prices) allows a decent return of investments in energy efficiency.

which would not otherwise have been undertaken by consumers (no free riding, no crowding out). The national level of incentive differs between countries, mainly according to disposable income levels, if households are the investors. Profitability can be enhanced by a combination of several instruments such as grants, reduced interest (soft) loans and tariff reductions, providing effective incentives beyond compliance. In order not to lose effectivity, fiscal incentives should be dynamic. If energy efficiency gains lead to decreasing energy expenditure and thus to increasing rebounds, they should be coupled with energy taxation which makes sure that the average energy cost is at least not sinking, and increasing for the laggards not making use of energy efficiency improvement opportunities.

## For further reading:

Spangenberg, Joachim (2016). Identification of promising instruments and instrument mixes for energy efficiency. *European Futures for Energy Efficiency (EUFORIE)*, deliverable D5.2.

Trotta, Gianluca and Lorek, Sylvia (2015). Consumers and Energy Efficiency – Stock taking of policy instruments targeting household energy efficiency. *European Futures for Energy Efficiency (EUFORIE)*, deliverable D5.1.

All EUFORIE deliverables are available at <http://www.euforie-h2020.eu>