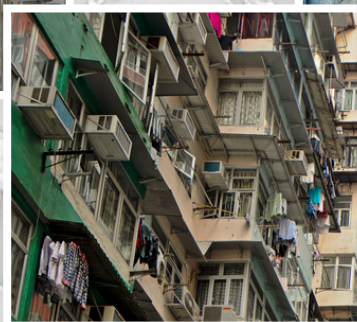


ALLEVIATING FUEL POVERTY IN THE EU

INVESTING IN HOME RENOVATION, A SUSTAINABLE
AND INCLUSIVE SOLUTION



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I. EXECUTIVE SUMMARY

Fuel poverty is a major problem for Europe, as between 50 and 125 million people are unable to afford a proper indoor thermal comfort. Despite the fact that there is no common European definition, the importance of the problem as well as the severe health impacts caused by fuel poverty are widely recognised. Specifically, excess winter deaths, mental disability, respiratory and circulatory problems are adversely affected by fuel poverty.

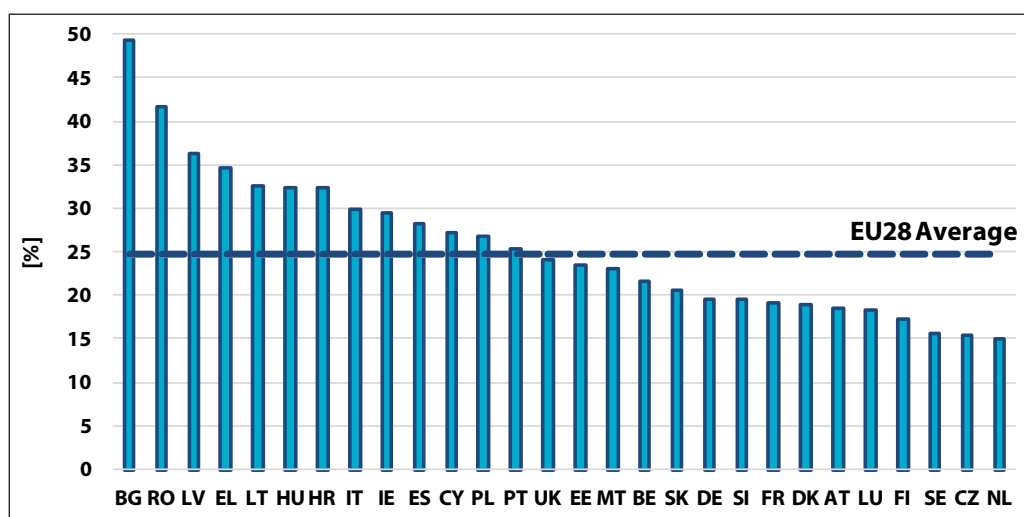


Figure: Percentage of people at risk of poverty in 2012 (Source: Eurostat).

To evaluate the extent of the problem, the study describes the current situation of fuel poverty in Europe using data from Eurostat. The indicators used to measure fuel poverty are referring to the inability of people to keep their home adequately warm, to pay their utility bills and to live in a dwelling without defects (leakages, damp walls, etc.). In 2012, 10.8% of the total European population were unable to keep their home adequately warm, increasing to 24.4% when referring to low-income people.

Country	Arrears on utility bills (%)	Inability to keep home adequately warm (%)	Dwellings with leakages & damp walls (%)	Country	Arrears on utility bills (%)	Inability to keep home adequately warm (%)	Dwellings with leakages & damp walls (%)
Bulgaria	50.7	70	29.5	Estonia	20	9.6	30.3
Hungary	58.8	33.9	53	Belgium	14	18.8	26.2
Greece	54.4	47.6	21	Ireland*	27.5	12.5	16.2
Latvia	39.5	35.1	43.3	France	17.8	15.2	22.1
Cyprus	25.9	50.6	34.6	Czech Rep.	19.4	15.3	20
Slovenia	37.5	17.3	46.1	Spain	17.9	18.2	17.9
Italy	24.5	44.1	30.1	Slovakia	18.3	13.6	19.7
Romania	41.5	25.4	30	Netherlands	8.6	8.7	27.4
Lithuania	22.8	38.2	28.6	Germany	8.6	14.8	21
Portugal	14.5	43	28.4	Denmark	5.5	7.1	25.3
Croatia	40.9	21.8	19.9	Luxembourg	6.6	2.2	28.9
Poland	30.1	27.6	20	Austria	11.3	7.7	15.2
Malta	19.4	32.1	12.4	Finland	13.7	3.8	8.6
UK	20.3	19.4	21.4	Sweden	10.3	3.5	11

Table: Percentage of people at risk of poverty affected by fuel poverty as reflected by three related indicators (Based on Eurostat data 2012). * Data from 2011.

The table, ranked by the average of the three fuel poverty indicators, presents the share of people at risk of poverty who are affected by fuel poverty. As shown, fuel poverty is an acute problem in most of Central, Eastern and Mediterranean EU countries, particularly in Bulgaria, Hungary, Greece and Cyprus, while it is less of an issue in northern European countries.

Fuel poverty can be correlated with low household income, high energy cost and energy inefficient homes and can be tackled by income increase, fuel prices regulation and energy efficiency improvements in buildings. Energy costs are growing faster than household income. Therefore, energy subsidies and direct financial support for household heating cannot provide a sustainable long-term solution to the fuel poverty problem. These measures require continuous public budget allocation without generating added value or economic growth. The continuous expenditure from public budgets only preserves the status quo.

However, vigorous energy renovation measures of fuel poor homes can give a long-term sustainable answer to fuel poverty. These measures address the root of the problem and result in reduced energy costs and/or improved thermal comfort in homes. Moreover, the implementation of energy efficiency measures can create or maintain jobs, reduce illness, rehabilitate poor districts and therefore contribute to social inclusion. Results from implemented energy renovation programmes targeting the fuel poor in some EU countries demonstrate these positive effects.

Case studies of EU countries financing measures against fuel poverty indicate that - even though energy efficiency measures have proven they be the most sustainable solution to the fuel poverty problem - they receive lower funding compared to income and fuel price support schemes. The study analyses the *Cohesion Policy* funds for the periods 2007-2013 and 2014-2020 and shows that a significant share -higher than the previous period- of the *Cohesion Policy* budget 2014-2020 can be used for energy efficiency actions. Therefore, all three *Cohesion Policy* financial instruments may support the energy renovation of buildings and in particular measures targeting fuel poor and vulnerable consumers.

In order to achieve the social, environmental and energy goals set by the EU for 2020, the report recommends the following actions:

- Higher allocation of EU Funds on renovation programmes targeting vulnerable and fuel poor people;
- Implementation of dedicated national programmes addressing the root causes of the fuel poverty problem;
- Shifting gradually the price control mechanisms and fuel subsidies to more active and effective public expenditure on renovation measures;
- Defining the societal groups that cannot afford sufficient energy to satisfy their basic needs;
- Improve statistical data collection to provide additional evidence on the scale and impact of fuel poverty in the EU, in order to have a reliable basis to develop effective policies and support programmes;
- Development of a longer-term fuel poverty eradication strategy for the European Union, which should be supported by a predictable and reliable policy framework including an EU-wide energy saving target for 2030.

II. FUEL POVERTY: A BIG CHALLENGE TO REACHING SUSTAINABLE AND INCLUSIVE GROWTH IN THE EU

The European Union's long-term strategy¹ seeks to secure smart, sustainable and inclusive growth, which can be translated into the ambitious goal of securing economic growth and increasing welfare by moving towards a low-carbon economy.

The European Commission (EC) in its Europe 2020 strategy defined seven flagship initiatives aiming among others at several targets to be reached by 2020, including:

- To increase the employment rate of the active population from 69% to 75%;
- To reduce greenhouse gas emissions by 20% (compared to 1990 levels), to increase the share of renewables in gross final consumption by 20% and to reduce the energy consumption by 20% through improved energy efficiency;
- To reduce by 25% the number of Europeans living below national poverty lines.

In March 2014 the EC released an interim evaluation of progress in meeting these Europe 2020 targets². According to this evaluation, while the primary energy consumption of the EU decreased by around 8% between 2006 and 2010, mainly due to the economic crisis, a further reduction of 6.3% is still needed to meet the 2020 energy efficiency target. This is even more challenging since the additional reduction needs to be achieved simultaneously with economic growth.



**Up to 124 million people or
one quarter of Europeans at
risk of poverty in 2012**

As part of the Europe 2020 strategy, at least 20 million people should be lifted out of the risk of poverty and exclusion by 2020, making the fight against poverty and social exclusion a priority for the EU. However, the recent evaluation of the Europe 2020 strategy² reveals that, due to the economic crisis, the number of people at risk of poverty increased from 80 million prior to the crisis (as estimated in the strategy) to 124 million in 2012. One out of four Europeans is at the risk of social exclusion. Additionally, it is estimated that by 2020, 100 million European citizens will still be at risk of poverty, even if all actual measures will be fully implemented. It is also recognised that *'the crisis has demonstrated the need for effective social protection systems'*.

According to the EC's evaluation, the employment rate in the EU remained stagnant ($\approx 68.4\%$) between 2010 and 2012 and based on the Europe 2020 strategy, the EU employment rate should be at least 75% by 2020. Therefore, from 2012 to 2020, around an extra 16 million people should enter the labour market.

In addition, while the EU GDP has been recovering recently and it is likely to continue to rise, the economic crisis deepened the inequalities in the income distribution. Currently in Europe, the richest 20% earn more than 5 times what the poorest 20% earn.

On top of these, the European population is ageing and it is estimated that in 2050 there will be twice as many people above 65 years of age than in 1990. In particular, elderly people are among the most exposed to fuel poverty due to the fact that they are likely to have lower income than the active population, they usually need higher indoor temperatures, they are more prone to diseases, they need more social assistance and they have higher risks and less appetite for investing in their homes.

According to the European Commission forecasts, in 2050 there will be twice as many people above 65 years of age than in 1990.

¹'Europe 2020: A European strategy for smart, sustainable and inclusive growth'. Available at: <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%2007%20-%20Europe%202020%20-%20EN%20version.pdf>

²"Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth", European Commission, Brussels, 19/3/2014. Available at: http://ec.europa.eu/europe2020/pdf/europe2020stocktaking_en.pdf

Towards achieving the 2020 targets on sustainable and inclusive goals, the fight against energy and fuel poverty can have a significant impact, as fuel poverty is recognised as one of the serious forms of poverty and social exclusion. While the topic does not have a commonly agreed approach over the EU, there are estimates indicating that at least 50 million people or 10% of Europeans are fuel poor nowadays³. Moreover, almost all people at risk of poverty are vulnerable on energy issues struggling to pay their energy bills or to secure a proper thermal comfort in their homes. Therefore, combating poverty without tackling fuel poverty is unlikely to be easily achieved.

There are many ways to cope with fuel poverty issues and to protect vulnerable consumers, including social tariffs for energy, social subsidies and heating grants to low-income households. However, these are rather passive measures, aiming to preserve the status quo at the best, representing an increasing burden for public budgets and without creating economic growth or leveraging private investments. Moreover, energy prices tend to increase and this is exacerbated by the growing energy import dependency of the EU, at least in the medium term. This problem tends to further increase the number of people living in energy/fuel poverty, especially if combined with high unemployment rates and with an income that does not grow proportionally with the energy prices.

As it is widely recognised, the most effective and sustainable way to deal with fuel poverty is by reducing the energy demand of the building through renovation.

Therefore, as it is widely recognised, the most effective and sustainable way for consumers to reduce their energy bills is through reducing the energy demand of the building by implementing energy saving measures. Thus, shifting the support from the EU and public budgets as well as from energy subsidies to the energy renovation of fuel poor or vulnerable households may generate at the same time economic growth and social inclusion.

In fact the reduction of energy bills is not necessarily the main benefit of renovating fuel poor homes. Even if energy costs are kept at the same level, the inhabitants gain significantly in terms of having a higher indoor thermal comfort and thus avoiding associated illness or premature death due to the impact of low temperatures. Therefore, the benefits are witnessed at a societal level by reducing the need for medical assistance and, at the same time, by having healthier citizens able to contribute more to the personal and societal welfare. Last but not least, the energy renovation of poor districts may give an important sign of social inclusion to people living at the edge of society. To a larger extent, it is well-known that renovation activities have a high job creation potential due to a high job intensity required in the construction sector^{4,5,6,7}. Therefore, by involving unemployed active people living in poor districts into the renovation processes of their homes, a virtuous circle may be created that can further contribute to their faster social inclusion by simultaneously offering jobs and better homes.

³"Tackling Fuel Poverty in Europe, Recommendations Guide for Policy Makers". Report produced in the framework of the Intelligent Energy Europe project EPEE- European Fuel Poverty and Energy Efficiency, September 2009. Available at: http://www.fuel-poverty.org/files/WP5_D15_EN.pdf.

⁴BPIE (2011). "Europe's buildings under the microscope." Available at: http://bpie.eu/eu_buildings_under_microscope.html#U2uDUrZBurQ

⁵Copenhagen Economics (2012). "Multiple benefits of investing in energy efficient renovation of buildings. Impact on Public Finances". A study commissioned by Renovate Europe. Available at: <http://www.renovate-europe.eu/uploads/Multiple%20benefits%20of%20EE%20renovations%20in%20buildings%20-%20Report%20only.pdf>

⁶B. Wesselink, R. Harmsen, W. Eichhammer (2010). "Energy Saving 2020. How to triple the impact of energy saving policies in Europe". A study commissioned by European Climate Foundation. Available at: <http://www.roadmap2050.eu/attachments/files/EnergySavings2020-FullReport.pdf>

⁷International Energy Agency (2009). "Ensuring Green Growth in a Time of Economic Crisis: The Role of Energy

Technology." Report for the G8 meeting, Siracusa, Italy 22-24 April 2009. Available at: https://www.iea.org/publications/freepublications/publication/ensuring_green_growth.pdf

Numerous EU policies, as well as EU Cohesion and Structural Funds, are in place to address the energy renovation of existing buildings. Recognising the problem, a few EU Member States (MS) are already implementing programmes and measures to deal with fuel poverty. However, these programmes are not sufficient and cannot address the problem in a strategic way without having a common European approach in defining it, shaping policies and implementing actions. Furthermore, a number of EU countries, especially those from Central and Eastern Europe where the least developed regions

are located, are having a difficult – if not impossible – time dealing effectively with the fuel poverty problem. Therefore, elaborating tailor-made EU and national plans to fight fuel poverty, coupled with increased use of EU funds, may substantially strengthen the effectiveness of the energy renovation measures, delivering sustainable solutions and contributing at the same time to meeting the wider 2020 goals.

Elaborating tailor-made EU and national plans to fight fuel poverty, coupled with increased use of EU funds, may substantially strengthen the effectiveness of the measures, delivering sustainable solutions and contributing at the same time to meeting the wider 2020 goals.

This report presents a brief analysis of the fuel poverty status in the EU, analyses the results of several EU-funded projects undertaking actions to improve the energy performance of low-income and fuel poor households, highlights the opportunity of using available EU Funds more effectively, and provides recommendations for further actions.

III. FUEL POVERTY: DEFINING THE PROBLEM

At the moment there is no consistent approach within the EU when defining criteria to identify people living in fuel poverty. Nevertheless, there are several approaches to identifying categories of people with problems in securing a sufficient amount of energy to meet their needs.

Globally, the term “energy poverty” recognises the lack of access to basic energy services, i.e. electricity and clean cooking facilities, and is used by international organisations, notably the IEA⁸ and the UN⁹. Energy poverty affects between 1.3 billion and 2.6 billion people from underdeveloped regions of the world and represents a major barrier to economic growth as well as for the health and wellbeing of the people.

In the EU, the problem of having access to electricity and energy services is no longer an issue. However, affordability of energy services is. This is generally recognised by the term “fuel poverty” (sometimes described as energy scarcity or energy poverty). According to several evaluations, it is estimated that between 50 and 125 million Europeans are currently fuel poor¹⁰.

Despite the pan-European dimension of the problem, the EU does not have a consistent approach to identifying people living in fuel poverty. According to a DG SANCO study¹¹ on electricity markets in the EU, most Member States did not have until recently an official definition of a citizen or population group that is “energy poor”. The survey undertaken in this study identified 10 MS where there is an official definition. The approaches in identifying consumers who have problems in paying their energy bills are based on several main criteria: minimum income threshold, share of income needed for paying adequate fuel requirements, vulnerable consumer categories such as retired people or with disabilities, or a mix of these.

The minimum income threshold is used in countries such as France, Greece, Malta or Romania. In France *“anyone who meets, in its housing, particular difficulties to have the necessary energy to meet its basic energy needs because of the inadequacy of its resources or of its housing conditions”*¹² is considered to be in fuel poverty.

The United Kingdom (UK) and Ireland both identified the issue of fuel poverty many years ago in terms of the share of income needed to heat a home adequately. According to the Irish definition, *“fuel poverty has been described as the inability to afford adequate warmth in a home, or the inability to achieve adequate warmth because of the energy inefficiency of the home”*.¹³ In the UK, according to the first official definition¹⁴ (1991), which is still unofficially used in other countries, *“a household is said to be fuel poor if it needs to spend more than 10% of its income on fuel to maintain an adequate level of warmth”*. Following a Government consultation, the most recent definition¹⁵ (2013), which is based on the Low Income High Cost approach¹⁶, introduces a mixed criteria of share of energy bill and income, finding households to be fuel poor if:

- They have required fuel costs that are above average (the national median level); and
- Were they to spend that amount, they would be left with a residual income below the official poverty line.

⁸Topic: Energy Poverty, International Energy Agency. Available at: <http://www.iea.org/topics/energypoverty/>

⁹UN 2010. “Energy for a sustainable future”, the secretary-general’s advisory group on energy and climate change (AGECC) summary report and recommendations, New York, 28 April 2010 <http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGECC%20summary%20report%5B1%5D.pdf>

¹⁰“Tackling Fuel Poverty in Europe, Recommendations Guide for Policy Makers”. Report produced in the framework of the Intelligent Energy Europe project EPEE- European Fuel Poverty and Energy Efficiency, September 2009. Available at: http://www.fuel-poverty.org/files/WP5_D15_EN.pdf.

¹¹Directorate General for Health and Consumer Affairs (DG SANCO), Report on the Functioning of Retail Electricity Markets for Consumers in the European Union, November 2010, Available at: http://ec.europa.eu/consumers/consumer_research/market_studies/docs/retail_electricity_full_study_en.pdf

¹²Loi n° 2010-788 du 12 juillet 2010 portant engagement national pour l’environnement. (Law committing a national engagement for environmental issues)

¹³“National Action Plan for Social Inclusion 2007-2016”, Government of Ireland, 2007.

¹⁴Boardman, “Fuel poverty: From cold homes to affordable warmth”, Belhaven Press, London, 1991.

¹⁵Fuel Poverty Statistics”, Department of Energy & Climate Change, 2013. Available at: <https://www.gov.uk/government/collections/fuel-poverty-statistics>

¹⁶Hills, “Getting the measure of fuel poverty – Final report on the Fuel Poverty Review”, Department of Energy & Climate Change, London, 2012.

Despite lacking a common European definition, the European Council Directive 2009/72/EC¹⁷ acknowledges that fuel poverty not only exists but also is a growing problem in the Community that needs to be directly addressed. The Directive also states the connection between fuel poverty and vulnerable consumers as it mentions that “each Member State shall define the concept of vulnerable customers which may refer to energy poverty and, inter alia, to the prohibition of disconnection of electricity to such customers in critical times”. The Directive does not foresee a common definition for vulnerable consumers to be implemented at national levels, but instead focuses on the existence of different (social) support mechanisms¹⁸.

As vulnerability and fuel poverty share common drivers^{19,20}, such as the low income and the poor quality of the housing stock, fuel poor people are likely to face other aspects of vulnerability as well (Figure 1), including housing status, individual circumstances and social context.

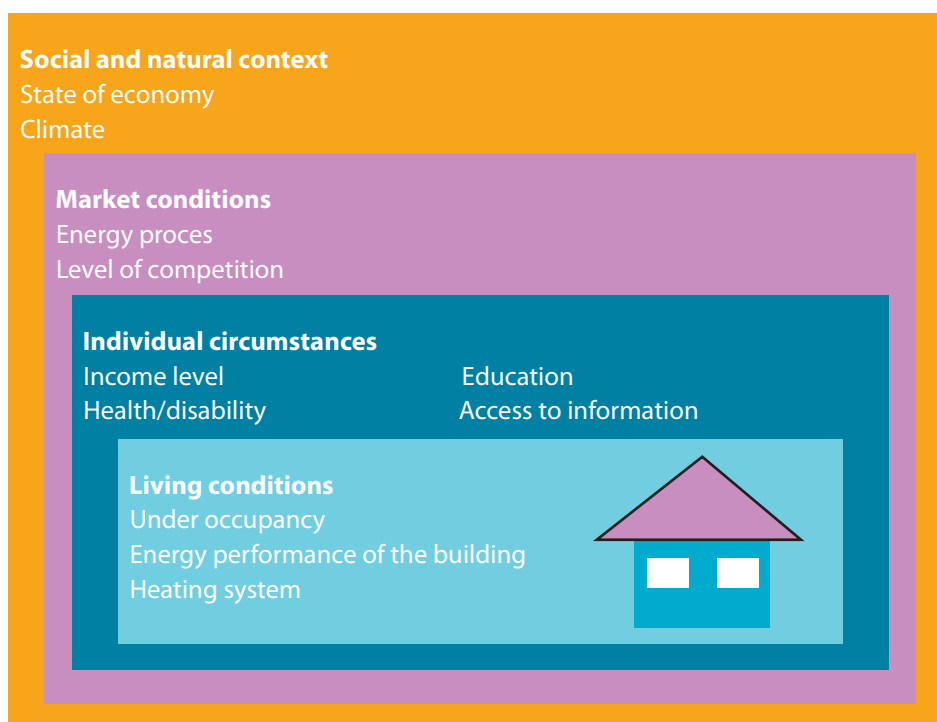


Figure 1: Drivers of vulnerability (Source: European Commission, DG ENER).

Regardless of the ill-defined correlation between fuel poverty and vulnerability, the EC, through its Energy Roadmap 2050²¹, makes it clear that tackling fuel poverty must be a task undertaken at national level and that vulnerable consumers might need specific support: “Vulnerable consumers are best protected from energy poverty through a full implementation by Member States of the existing EU energy legislation and use of innovative energy efficiency solutions”.

¹⁷Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

¹⁸ERRA, “Vulnerable Customers and Possible Support Schemes”, 2011.

¹⁹EC, “Vulnerable Consumer Working Group, Guidance Document on Vulnerable Consumers”, November 2013.

²⁰R. Walker, H. Thomson, C. Liddell, “FUEL POVERTY 1991 – 2012: Commemorating 21 years of action, policy and research”, University of Ulster, 2013. Available at: <http://fuelpoverty.eu/wp-content/uploads/2013/03/Fuel-poverty-anniversary-booklet.pdf>

²¹“Energy roadmap 2050”, European Commission, 2012, Available at: http://ec.europa.eu/energy/publication/doc/2012_roadmap_20150_en.pdf

For the efficient treatment of the fuel poverty problem, its extent should be determined. This is a really challenging task due the lack of an official definition.

Despite this fact, fuel poverty can be estimated by using proxy indicators. EU Statistics on Income and Living Conditions (EU - SILC) include three variables that are commonly used as proxies of fuel poverty and, based on a recent study²², can be used as the main indicators to describe and measure fuel poverty in the EU:

- Inability to keep home adequately warm²³;
- Arrears on utility bills; and
- The presence of a leaking roof, damp walls, floors or foundation, or rot in window frames or floor.

Indicative from the different descriptions of the problem, as well as from the indicators used to measure it, fuel poverty is mainly caused by three factors:

- The low household income (also relative to the size of the property);
- The high cost of energy; and
- The poor energy efficiency of the house.

²²Thomson, Snell, "Quantifying the prevalence of fuel poverty across the European Union", 2012.

²³ Adequate level of warmth: 21°C in the living room and 18°C in other occupied rooms (World Health Organization).

IV. HEALTH IMPACT OF FUEL POVERTY

Although it has been found that fuel poverty is not synonymous with general poverty, there is a degree of correlation between the two²⁴. The lowering of living standards, often below what is considered “acceptable”, is a common practice that many fuel poor households are forced to follow²⁵.

Along with a poor diet, there is evidence that fuel poverty also has an impact on individuals’ health, especially that of older people and children²⁶. A study²⁷ regarding the impact of fuel poverty on children found that “for infants, living in fuel poor homes is associated with a 30% greater risk of admission to hospital or primary care facilities”. In addition, vulnerable groups such as sick, elderly, and unemployed people who also tend to spend large amounts of time at home are the most exposed to cold indoor climate and poor housing conditions²⁸.

Different studies have examined the correlation between fuel poverty and health impacts, such as:

- Indoor cold and mortality;
- Indoor dampness, mould problems and childhood asthma; and
- Housing quality and mental health.

INDOOR COLD AND MORTALITY

Cold indoor temperatures are determined by a combination of factors. Energy inefficient building design and/or heating systems can make homes difficult to heat. Moreover, low household income and high fuel prices further exacerbate heating affordability.

The link between excess winter deaths and cold temperatures is relatively well established²⁹. It has been proven that the seasonal variation in blood pressure is more strongly related to indoor than to outdoor temperature. Additionally, it was estimated³¹ that up to 65% of the *Excess Winter Mortality* (EWM) is due to cold and associated diseases, while between 30% and 50% of excess winter mortality is attributed specifically to housing conditions³².

Energy inefficient housing and difficulties with paying heating bills vary widely in Europe³³. Therefore, excess winter mortality, affected by these parameters, is not only a problem concerning the northern European countries but for southern countries as well³⁴. Specifically, as it is stated in a study³⁴, Portugal, Greece, Ireland and the United Kingdom, countries with the poorest housing status among surveyed, demonstrate the highest excess winter mortality. The fact that excess winter deaths is also a major problem for countries in warm climates, is also proven by the high rates of the *Excess Winter Deaths Index* (EWDI)³⁵ in Malta, Portugal, Spain and Cyprus (Figure 2).

²⁴Hills J., “Getting the measure of fuel poverty”, report commissioned by Department of Energy and Climate Change (DECC), London, March 2012.

²⁵Brunner et al., “Experiencing fuel poverty: Coping strategies of low-income households in Vienna/Austria”, ELSEVIER, 2012.

²⁶“Tackling Fuel Poverty in Europe, Recommendations Guide for Policy Makers”. Report produced in the framework of the Intelligent Energy Europe project EPEE- European Fuel Poverty and Energy Efficiency, September 2009. Available at: http://www.fuel-poverty.org/files/WP5_D15_EN.pdf.

²⁷Liddell C., “The impact of fuel poverty on Children”, University of ULSTER, December 2008.

²⁸“Housing and health: building for the future”, British Medical Association, 2003.

²⁹Nazroo J., “Mortality and health life expectancy”, University College London 2006.

³⁰Khaw, “Temperature and cardiovascular mortality”, *Lancet*, 345: 337-8, 1995.

³¹Wilkinson P. et al., “Cold comfort: the social and environmental determinants of excess winter deaths in England, 1986-1996”, 2001.

³²Keatinge W. R., “Heat related mortality in warm and cold regions of Europe: observational study”, 2000.

³³Whyley C., Callender C., “Fuel poverty in Europe: Evidence from the European Household Panel Survey”, National Energy Action, 1997.

³⁴Healy J., “Excess winter mortality in Europe: a cross country analysis identifying key risk factors”, 2002.

³⁵EWDI indicates if the expected deaths in the winter are higher than the rest of the year. West Midlands Public Health Observatory. Available at: [http://www.wmpho.org.uk/excesswinterdeathsineEnglandatlas/WMPHO%20EWD%20Atlas%20User%20Guide%20\(Jan%202013\).pdf](http://www.wmpho.org.uk/excesswinterdeathsineEnglandatlas/WMPHO%20EWD%20Atlas%20User%20Guide%20(Jan%202013).pdf)

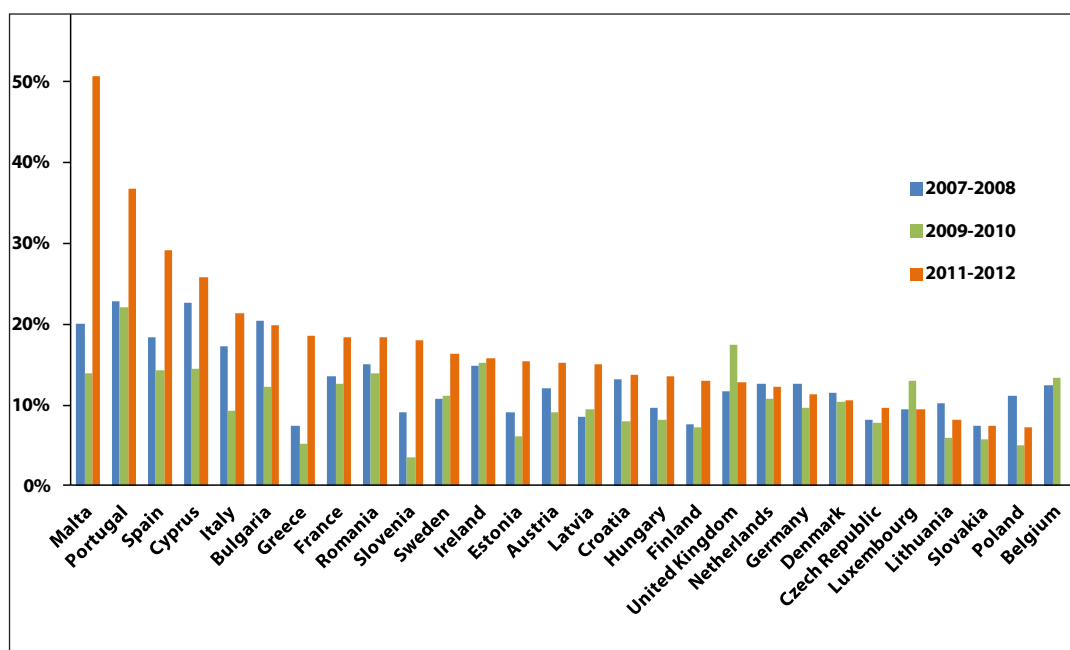


Figure 2: Excess winter deaths index (EWDI) between 2007 and 2012 in the EU28 (BPIE calculation³⁶ based on Eurostat data).

Adaptation of buildings is therefore key to reducing the levels of mortality resulting from cold winter and hot summer temperatures, and energy efficiency measures may be able to address both issues³⁷.

INDOOR DAMPNESS, MOULD PROBLEMS AND CHILDHOOD ASTHMA

Since the 1990s, health problems caused by dampness, moisture and mould in indoor environments have been studied in several surveys worldwide. Among health effects, asthma is the most common chronic disease in childhood and thus of major public health importance. According to the World Health Organization³⁸, indoor mould exposure is responsible for 12% of new childhood asthma in Europe, which means 55,842 potentially avoidable DALYs³⁹ and 83 potentially avoidable deaths per year. Additionally, indoor dampness causes 15% of new childhood asthma in Europe, which represents approximately 69,462 potentially avoidable DALYs and 103 potentially avoidable deaths per year.

HOUSING QUALITY AND MENTAL HEALTH

For many people home is a refuge, a place to relax from daily stress. However, poor housing can stress households in different ways apart from the financial worries about paying utility bills.

Numerous investigators have examined the correlation between mental health and housing⁴⁰. Based on one study⁴¹, adults who move to housing of better structural quality have better mental health. Additionally, it has been proven that fuel poverty can affect mental wellbeing and social contact⁴², as

³⁶Based on the formula: $EWDI = \frac{[winter\ deaths\ (Dec-Mar)] - 0.5[Non-winter\ deaths\ (Aug-Nov,\ Apr-Jul)]}{(Average\ of\ non-winter\ deaths)}$. "West Midlands Public Health Observatory." Available at: [http://www.wmpho.org.uk/excesswinterdeathsinenglandatlas/WMPHO%20EWD%20Atlas%20User%20Guide%20\(Jan%202013\).pdf](http://www.wmpho.org.uk/excesswinterdeathsinenglandatlas/WMPHO%20EWD%20Atlas%20User%20Guide%20(Jan%202013).pdf)

³⁷Porritt et al., "Assessment of the interventions to reduce dwelling overheating during heat waves considering annual energy use and cost", 2011.

³⁸Braubach M., Jacobs D. E., Ormandy D., "Environmental burden of disease associated with inadequate housing", World Health Organization, Europe, 2011.

³⁹One DALY (Disability-Adjusted Life Year) can be thought of as one lost year of "healthy" life (World Health Organization).

⁴⁰Evans G., "The built environment and mental health", Journal of Urban Health, December 2003.

⁴¹Wilner D., "The housing environment and family life: A longitudinal study of the effects of housing on morbidity and mental health", Johns Hopkins Medical School, Baltimore, 1962.

⁴²Anderson W., White V., Finney A., "Coping with low incomes and cold homes", 2010.

well as the development of children⁴³. Inadequate housing indirectly affects children's educational attainment and emotional well-being, while it can also affect their diet if households reduce spending on food to afford fuel to keep warm⁴⁴. By contrast, studies⁴⁵ have shown that better housing conditions, while providing other benefits, improve children's performance at school.

⁴³Harrington et al., "Keeping warm and staying well: Findings from the qualitative arm of the Warm Homes Project", May 2003.

⁴⁴Ormandy D., Ezratty V., "Health and thermal comfort: From WHO guidance to housing strategies", Energy Policy, Vol.49, 2012.

⁴⁵"The Health Impacts of Cold Homes and Fuel Poverty", Marmot Review Team for Friends of Earth, May 2011.

V. WHERE WE STAND NOW: FUEL POVERTY IN THE EU

Fuel poverty and general economic poverty are two different conditions, which are related. Since 2009, mainly due to the economic crisis, the number of people in Europe living at risk of poverty⁴⁶ is constantly increasing, reaching more than 124 million people in 2012 (Figure 3).

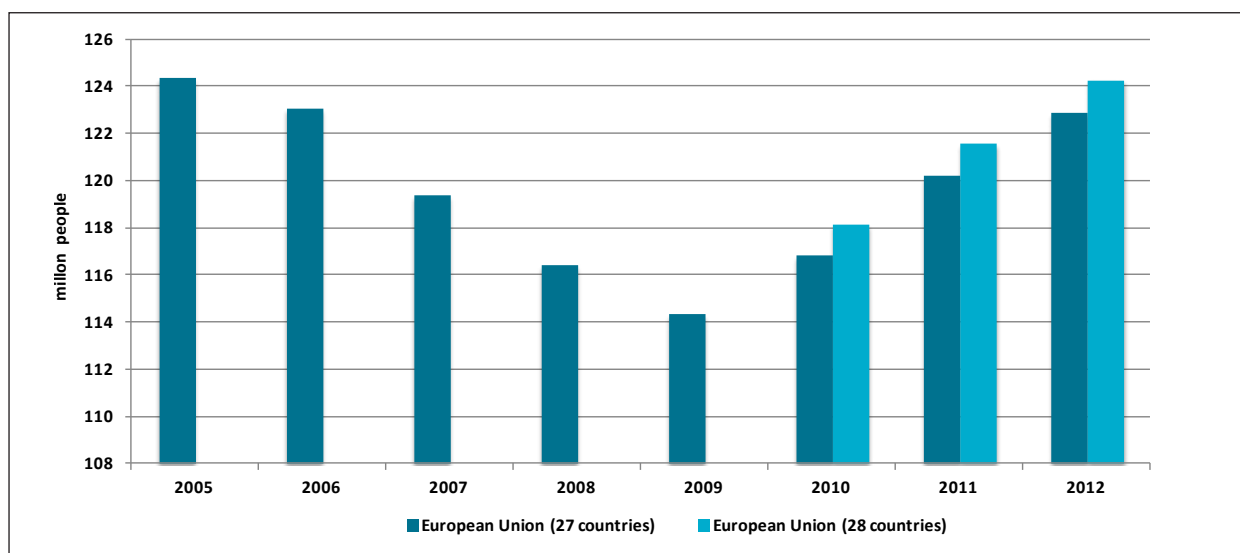


Figure 3: Number of people at risk of poverty or social exclusion, from 2005 to 2012 (Source: Eurostat).

Despite the fact that half of the poor people in Europe live in four of the largest Member States – Italy, Germany, United Kingdom and Spain – the countries with the highest rate of poor people, as a percentage of their population are Bulgaria, Romania, Latvia and Greece (Figure 4).

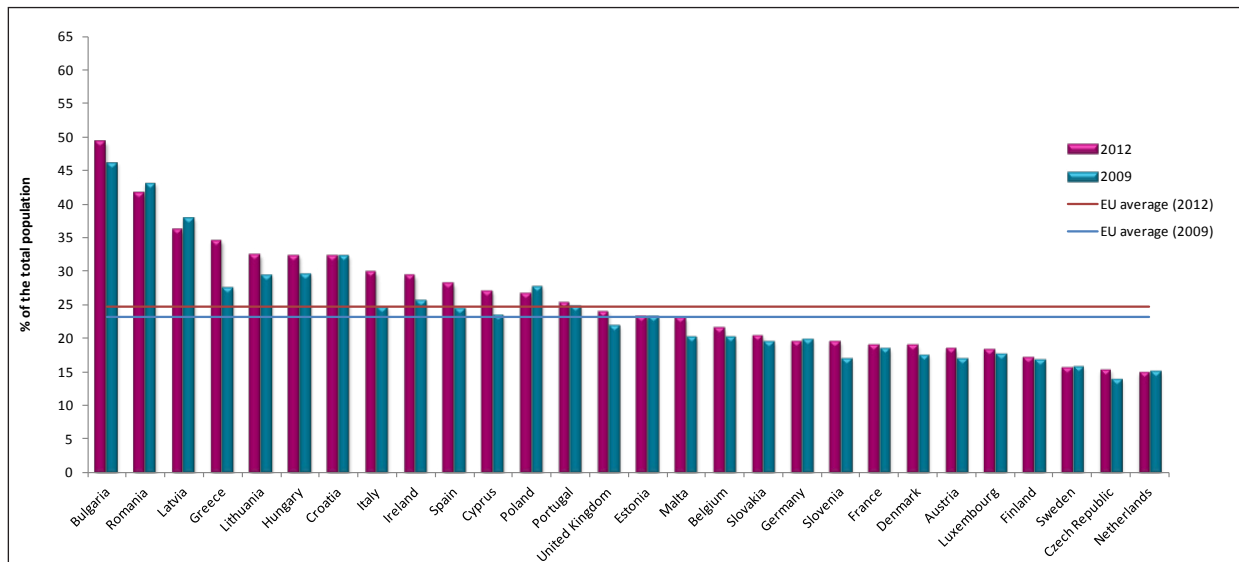


Figure 4: People at risk of poverty or social exclusion as percentage of the total population in EU28 (Source: EU – SILC). Data from 2011.

From 2009 to 2012, Greece, Cyprus, Italy and Spain have the highest increase in rates of poverty among the EU28 countries, while on the other hand, in only six countries (Poland, Germany, Romania, Latvia, Lithuania, Estonia), the number of poor people has decreased over the same period (Table 1).

⁴⁶According to Eurostat, the at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfers. The equivalised income is defined as the household's total income divided by its equivalent size, taking into account the size and composition of the household, and is then attributed to each household member.

Country	MM people at risk of poverty (2009)	MM people at risk of poverty (2012)	Absolute difference (MM people)	Relative difference
Greece	3.01	3.80	0.79	26.2%
Cyprus	0.19	0.23	0.05	24.5%
Italy	14.84	18.19	3.36	22.6%
Spain	11.23	13.09	1.86	16.05%
Slovenia	0.34	0.39	0.05	15.6%
Ireland	1.15	1.32*	0.17	14.7%
Malta	0.08	0.09	0.01	14.6%
United Kingdom	13.39	15.08	1.69	12.6%
Luxembourg	0.09	0.10	0.01	11.8%
Denmark	0.96	1.06	0.10	9.9%
Belgium	2.15	2.35	0.21	9.7%
Austria	1.41	1.54	0.14	9.7%
Czech Republic	1.45	1.58	0.13	9.1%
Hungary	2.92	3.19	0.26	9.0%
Croatia	1.30**	1.37	0.07	5.1%
France	11.20	11.76	0.56	5.0%
Slovakia	1.06	1.11	0.05	4.5%
Sweden	1.46	1.52	0.06	4.1%
Finland	0.89	0.92	0.03	3.4%
Bulgaria	3.51	3.62	0.11	3.1%
Portugal	2.65	2.67	0.02	0.6%
Netherlands	2.48	2.49	0.01	0.4%
Estonia	0.31	0.31	0.00	-0.3
Lithuania	0.99	0.98	-0.01	-1.0
Germany	16.22	15.91	-0.31	-1.9%
Romania	9.11	8.91	-0.21	-2.2%
Poland	10.45	10.13	-0.33	-3.1%
Latvia	0.81	0.73	-0.8	-9.5%
EU28	115.63	124.42	8.79	7.6%

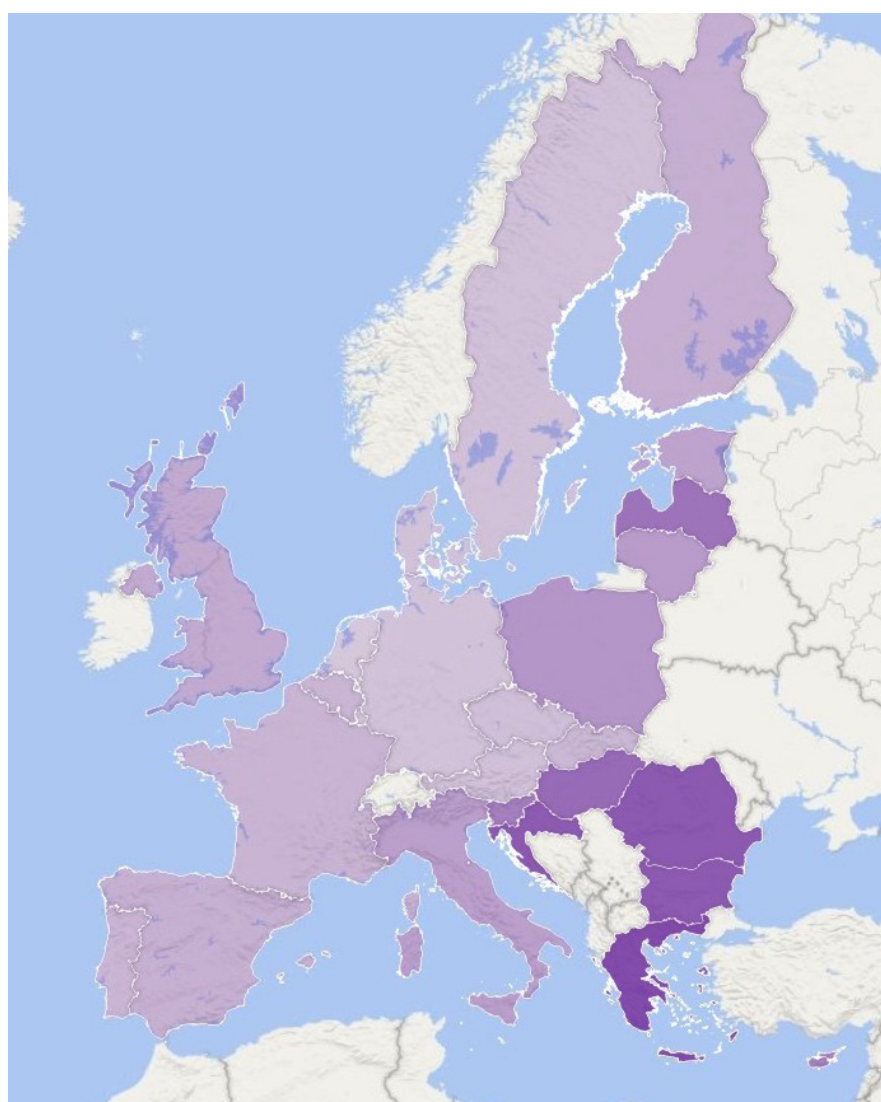
Table 1: Relative and absolute difference of people at risk of poverty or social exclusion between 2009 and 2012 (source: Eurostat) *Data from 2011 **Data from 2010

As mentioned previously, fuel poverty can be measured by using proxy indicators. The following table presents the correlation between these indicators, as well as the connection between the indicators and the percentage of people at risk of poverty.

	People at risk of poverty	Inability to keep home adequately warm	Dwelling with a leaking roof, damp walls	Arrears on bills
People at risk of poverty	1	0.77	0.23	0.84
Inability to keep home adequately warm	0.77	1	0.29	0.58
Dwelling with a leaking roof, damp walls	0.23	0.29	1	0.32
Arrears on bills	0.84	0.58	0.32	1

Table 2: Correlation between fuel poverty indicators (BPIE calculation based on Eurostat data 2012).

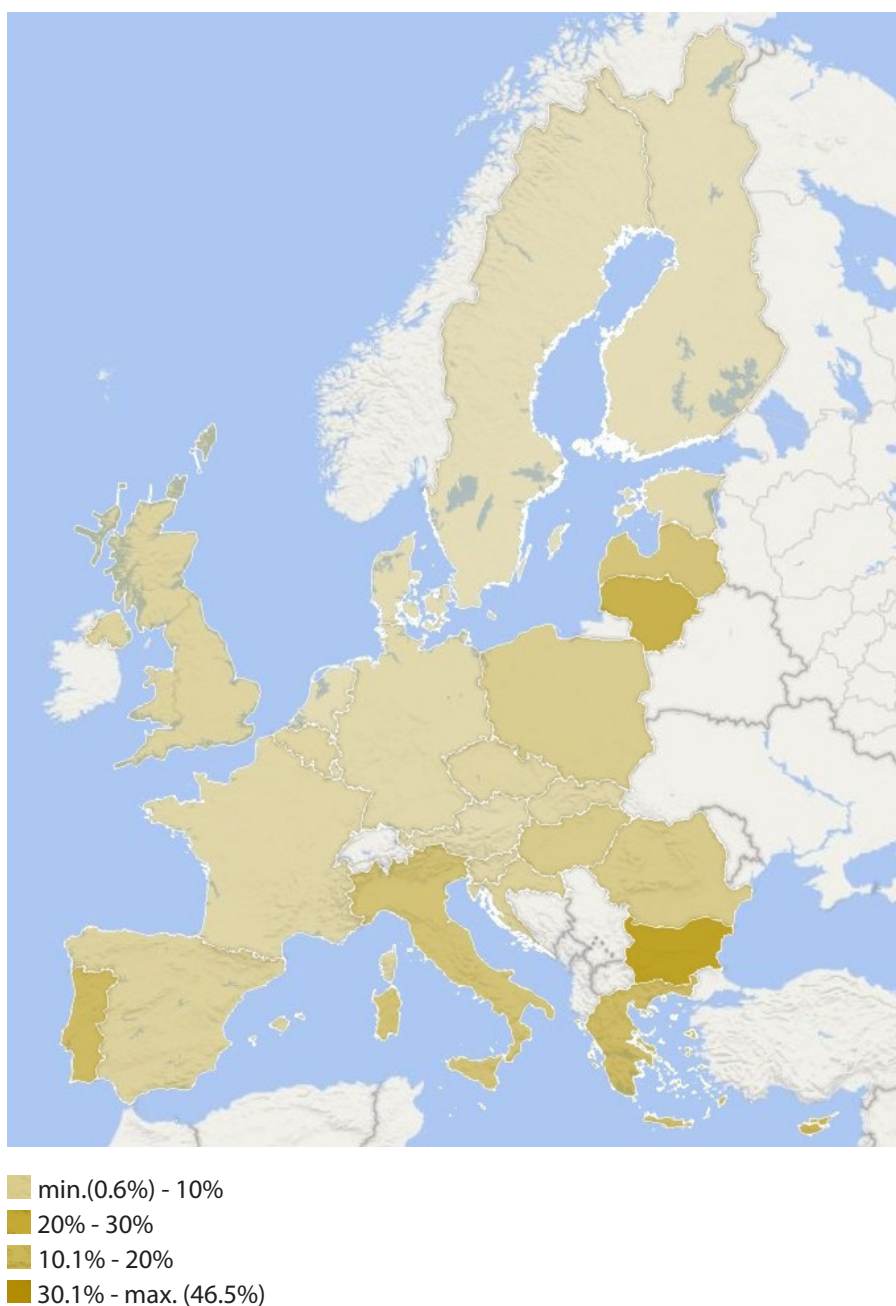
As shown in Table 2, there is a strong correlation (0.84) between the percentage of people living at risk of poverty and the percentage of people falling into arrears, which means that countries with the highest percentage of poor people tend to have the highest percentage of people falling into arrears. As shown in the following map, Greece, Romania and Bulgaria have the highest percentages of people falling behind on their payments, with Greece showing a huge increase compared to the 2009 share. At the other extreme, in Luxembourg, The Netherlands, Germany and Denmark, the payment of utility bills is a problem for only a small percentage of the total population.



■ min. (2.2%) - 10%
 ■ 10.1% - 20%
 ■ 20.1% - max. (31.8%)

Map 1: Arrears on utility bills in Europe in 2012 (BPIE, based on Eurostat data).

The inability to keep the home adequately warm is one more fuel poverty indicator. As presented in Table 2, there is a strong link (0.77) between people at risk of poverty and those who are unable to keep their home adequately warm. The correlation between the indicators can also be implied by the depiction of the data on the European map (Map 2), where it is obvious that the poorest countries also have the highest rates of people unable to keep their home adequately warm.



Map 2: Inability to keep home adequately warm in Europe in 2012 (BPIE, based on Eurostat data).

Studying further the fuel poverty indicators across Europe, Bulgaria and Lithuania are the countries with the highest rates of people who are not able to keep their homes adequately warm. These countries are followed by Cyprus, Portugal and Greece, all of which are Mediterranean countries with mild winters. On the contrary, in colder Northern countries (Sweden, Finland, The Netherlands and Denmark), only a low percentage of the total population is unable to have an adequately warm home.

As depicted in the graph below, vulnerable consumers (e.g. elderly people or single parent with low income) are more likely to be unable to keep their home adequately warm.

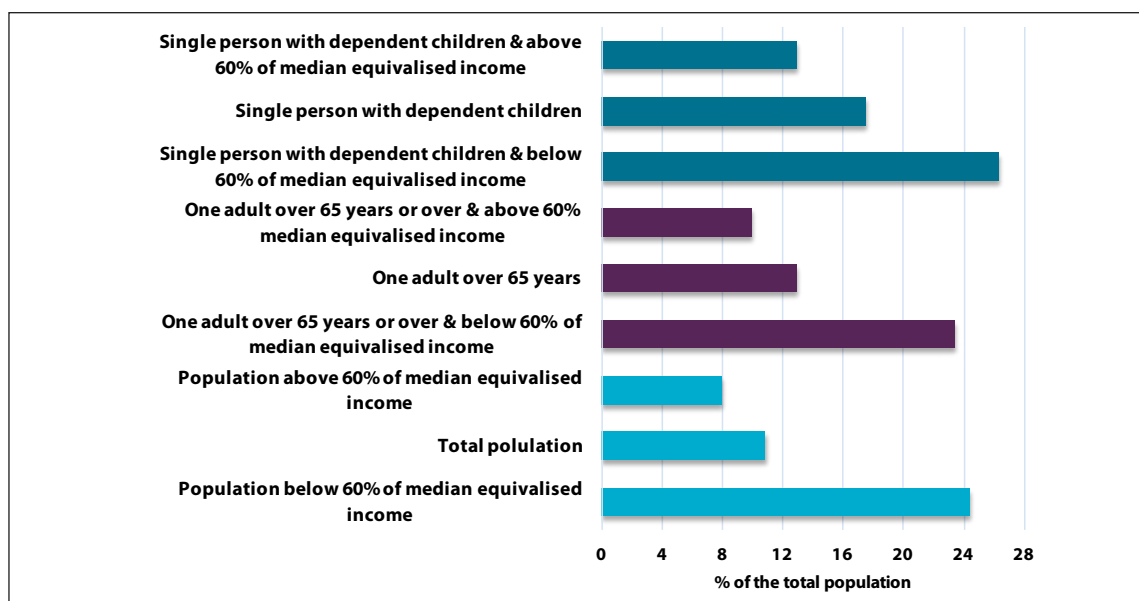


Figure 5: Percentage of different (vulnerable) consumers' categories in the EU that are unable to keep their home adequately warm (Source: Eurostat).

The maintenance of a warm indoor environment is a very challenging task, especially for people at risk of poverty. In 2012, 24.4% of the poor people in Europe cannot afford an adequately warm home, while additionally 8% of people who are not at risk of poverty face the same problem (Figure 5). More specifically, 70% of the poor people in Bulgaria were unable to have an adequate warm home, while the corresponding percentage for Cyprus, Greece, Italy and Portugal was above 40% (Figure 6). In addition, Romania, Poland, Malta, Latvia and Lithuania also registered higher levels than the EU average.

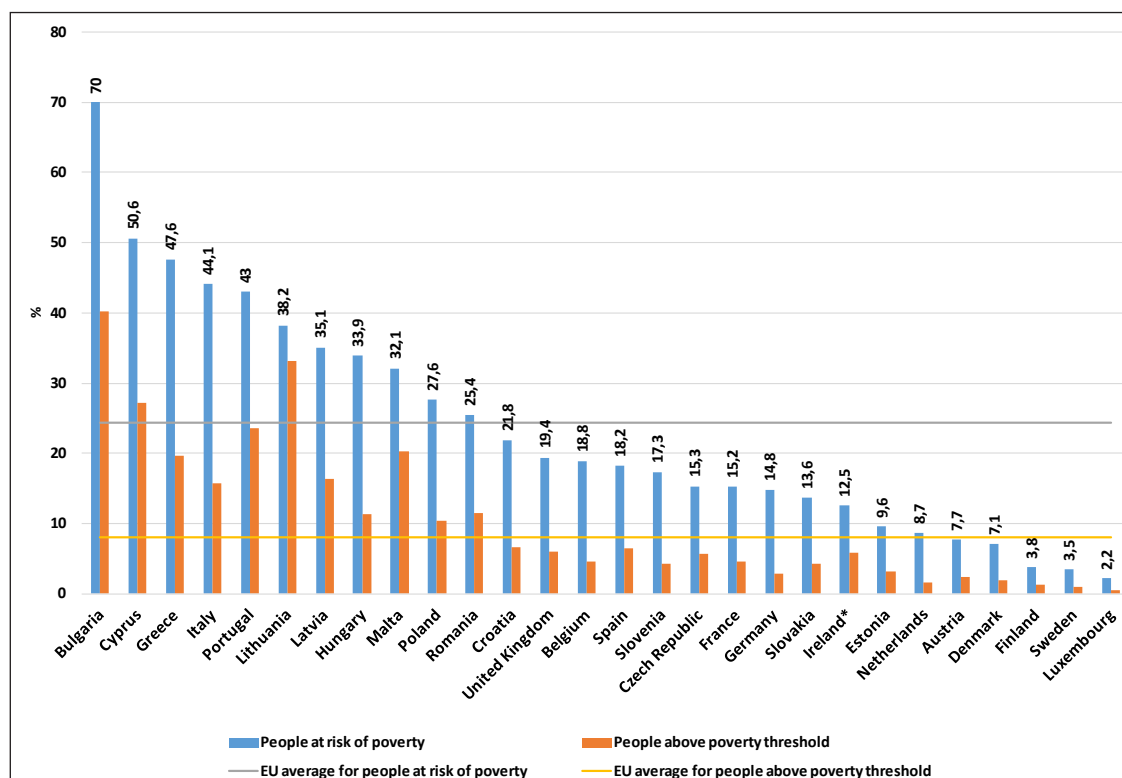
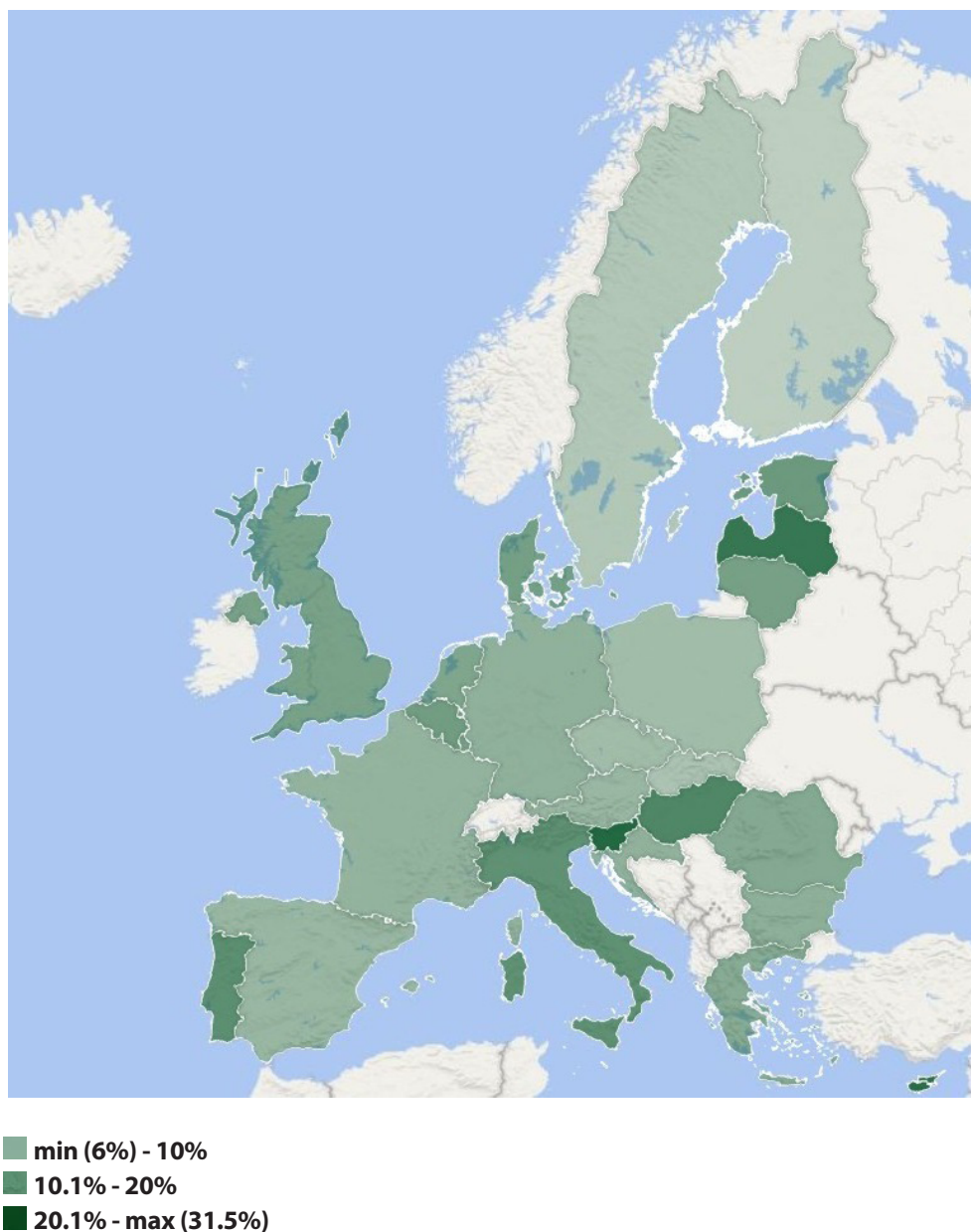


Figure 6: Inability to keep home adequately warm (Source: Eurostat 2012). *Data from 2011.

The third fuel poverty indicator is the percentage of the population living in a dwelling with a defect, notably a leaking roof or damp walls, floors or foundation. In this category, Slovenia, Cyprus and Latvia show the highest percentages, while in Slovakia, Sweden and Finland less than 9% of the population live in homes with these defects (Map 3).



Map 3: People living in a dwelling with leaking roof, damp wall, floors or foundation in Europe in 2012 (BPiE, based on Eurostat data).

The above maps show that Bulgaria, Cyprus and Greece have high rates for all three fuel poverty indicators. Therefore, it can be concluded that these are the three EU countries with the most serious fuel poverty issues. On the other hand, based on these indicators, the countries where fuel poverty is least significant are Sweden, The Netherlands, Denmark and Luxembourg.

The percentages of the aforementioned fuel poverty indicators are significantly high among people at risk of poverty. As shown in Table 3 (it shows which EU countries are ranked by the average of the three fuel poverty indicators), high share of people at risk of poverty with particularly high rates in fuel poverty indicators come from the countries from the left side of the table, i.e. Bulgaria, Hungary, Greece, Latvia and Cyprus.

Country	Arrears on utility bills (%)	Inability to keep home adequately warm (%)	Dwellings with leakages & damp walls (%)	Country	Arrears on utility bills (%)	Inability to keep home adequately warm (%)	Dwellings with leakages & damp walls (%)
Bulgaria	50.7	70	29.5	Estonia	20	9.6	30.3
Hungary	58.8	33.9	53	Belgium	14	18.8	26.2
Greece	54.4	47.6	21	Ireland*	27.5	12.5	16.2
Latvia	39.5	35.1	43.3	France	17.8	15.2	22.1
Cyprus	25.9	50.6	34.6	Czech Rep.	19.4	15.3	20
Slovenia	37.5	17.3	46.1	Spain	17.9	18.2	17.9
Italy	24.5	44.1	30.1	Slovakia	18.3	13.6	19.7
Romania	41.5	25.4	30	Netherlands	8.6	8.7	27.4
Lithuania	22.8	38.2	28.6	Germany	8.6	14.8	21
Portugal	14.5	43	28.4	Denmark	5.5	7.1	25.3
Croatia	40.9	21.8	19.9	Luxembourg	6.6	2.2	28.9
Poland	30.1	27.6	20	Austria	11.3	7.7	15.2
Malta	19.4	32.1	12.4	Finland	13.7	3.8	8.6
UK	20.3	19.4	21.4	Sweden	10.3	3.5	11

Table 3: Fuel poverty indicators of people at risk of poverty (based on Eurostat data 2012).

*Data from 2011

To conclude, fuel poverty is a major threat for a significant proportion of the European population (Table 4), though rates vary significantly across different Member States. Perhaps it is surprising to note that fuel poverty is less of an issue in colder countries than in warmer ones. Apart from differences in relative income, an explanation can be found in the fact that a colder climate means that energy efficient dwellings become much more of a necessity, with progressively tougher building standards introduced over the years as technologies develop.

	People at risk of poverty	Inability to keep home adequately warm	Dwelling with a leaking roof, damp walls	Arrears on bills
2009	23.2%	9.3%	16%	8.9%
2012	24.8%	10.8%	15.11%	9.7%
Relative difference from 2009 to 2012	6.9%	17.40%	-5.63%	8.99%

Table 4: Average share of poor and fuel poor people (proxy indicators) in the EU28 for 2009 and 2012.

VI. ANALYSING SOLUTIONS

As stated in Chapter 2, fuel poverty is driven by three main factors: household income, cost of energy, and energy efficiency of the property which can consequently be mitigated through:

- Income increase;
- Fuel prices regulation; and
- Energy efficiency improvements in dwellings.

Despite the fact that since 2007 electricity and gas prices have significantly increased (Figure 7), the household net income has not grown at the same pace (Figure 8), while the energy consumption per dwelling has only slightly reduced (Figure 9).

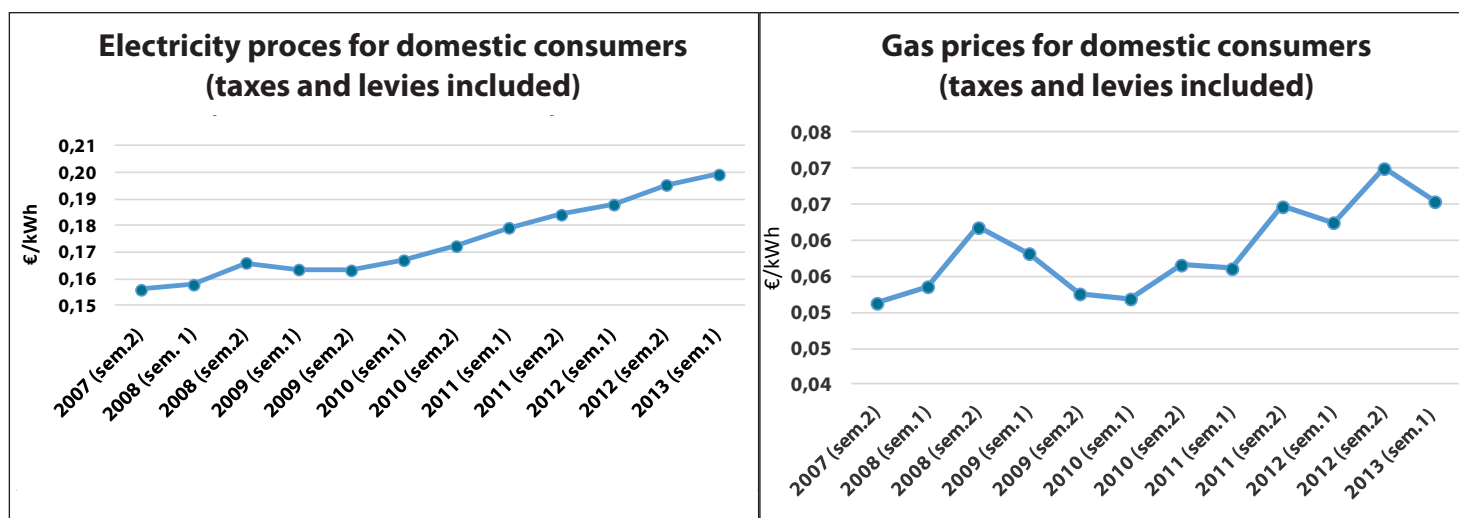


Figure 7: Average electricity and gas prices in the EU28 since 2007 (Source: Eurostat).

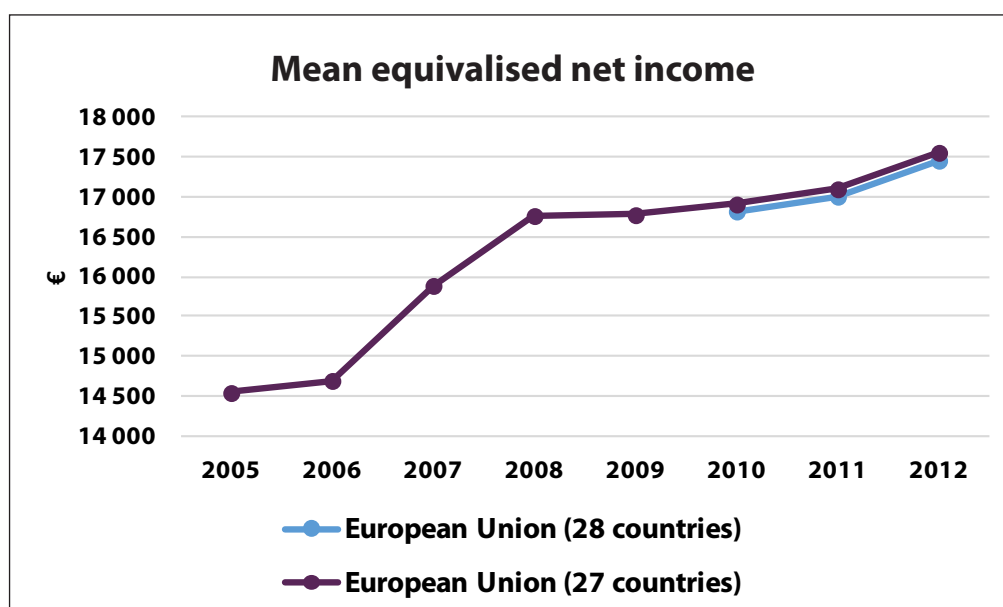


Figure 8: Mean equivalised net income in the EU since 2005 (Source: Eurostat).

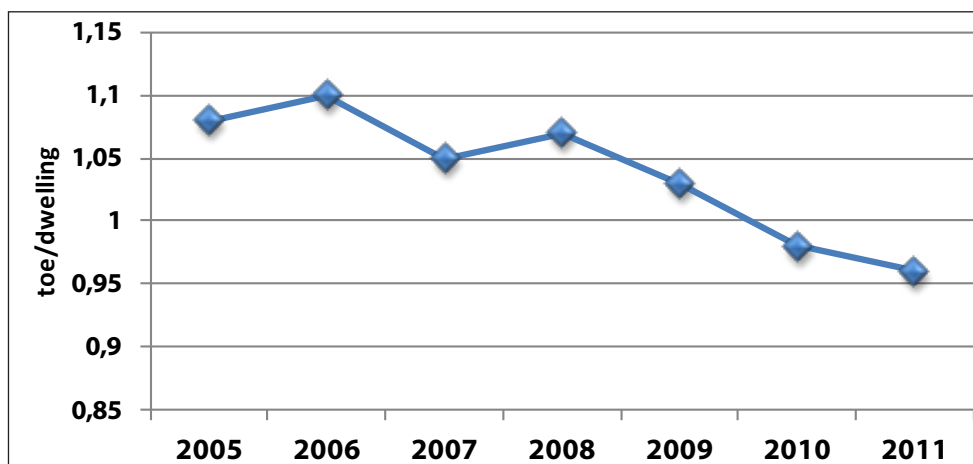


Figure 9: Unit consumption per dwelling for space heating with climatic corrections (Source: ODYSSEE – MURE).

As modelling has shown⁴⁷, if fuel prices increase faster than the income, fuel poverty will rise. Therefore, taking into consideration the evolution of the abovementioned indicators (Figure 10), as well as the economic downturn in Europe, it is reasonable to assume that Europe is moving deeper into fuel poverty rather than the opposite.

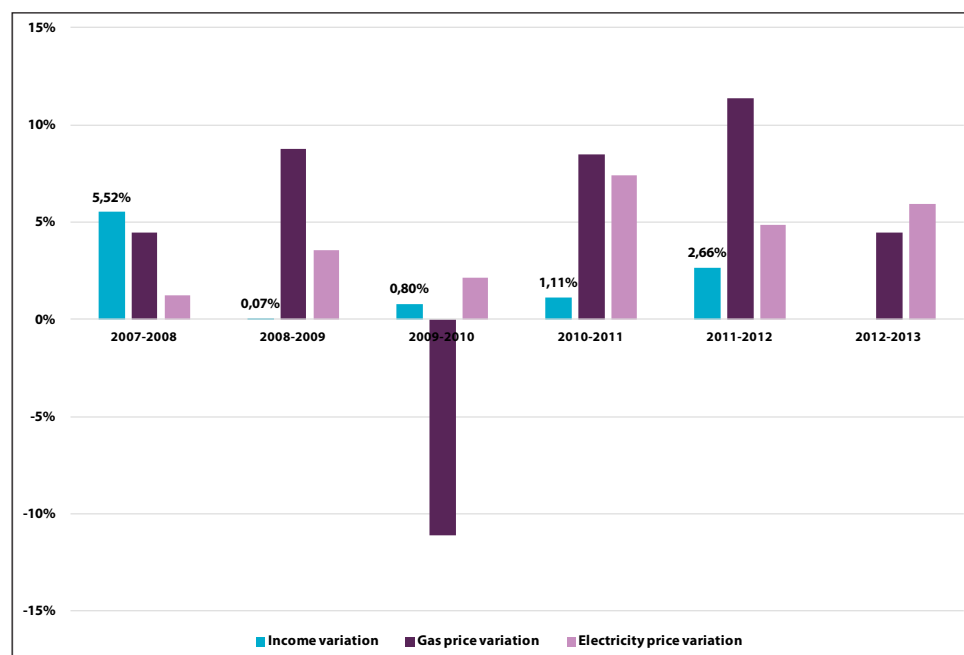


Figure 10: Energy prices and mean equivalised net income variation. BPIE calculation based on values of Figures 7 through 8.

To exacerbate the fuel poverty problem, the economic crisis has deepened the inequalities in income distribution, with the 20% richest Europeans now earning more than 5 times the earnings of the 20% poorest citizens. Additionally, the EU population is ageing and therefore the vulnerable category of people above 65 years old is estimated to have doubled by 2050 compared with 1990⁴⁸.

⁴⁷Roberts S., "Energy, equity and the future of the fuel poor", ELSEVIER, 2008.

⁴⁸COM(2014) 130 final/2, Brussels 19.03.2014. "Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth", available at: http://ec.europa.eu/europe2020/pdf/europe2020stocktaking_en.pdf

Energy price regulation and direct financial support to low income households may only offer a temporary solution to the fuel poverty problem, as they are dynamic measures and strongly dependent on many economic factors. For the same reason, social tariffs and energy subsidies are not sustainable and effective measures against fuel poverty requiring continuous and even increased funding from the public budgets. Therefore, these solutions do not solve the fuel poverty problem in the long term while addressing the effect rather than the cause of the problem.

On the other hand, many studies⁴⁷ illustrate that increasing the energy efficiency of fuel-poor homes is the only long-term sustainable solution. Consequently, it is imperative to note the importance of improving the energy efficiency of dwellings as the only sustainable measure to address the cause of fuel poverty. The improvement of the overall energy performance of a building may result in reduced energy bills and better thermal comfort in homes. Additionally, energy efficiency improvements can deliver multiple benefits, not only with regards to environmental and economic issues but also impacting social aspects (Figure 11).

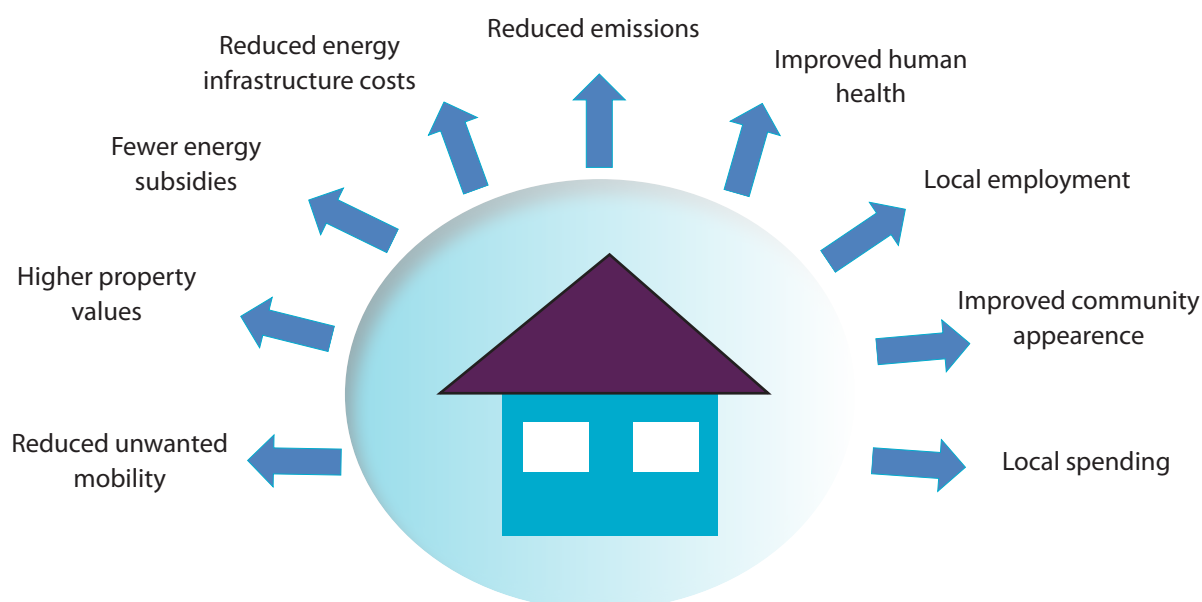


Figure 11: Energy efficiency benefits⁴⁹.

Consequently, the most effective answer to the fuel poverty problem can be given by improving buildings energy efficiency. Income and fuel subsidies should only be considered as complementary measures that are used to finance fuel poor households in temporary situations (e.g. fuel price increase)⁴⁹ or emergencies (e.g. excessive winter). However, it will be a more profitable investment for public budgets to gradually shift these budgets to delivering improvements of the building's energy performance.

Energy efficiency measures are widely seen as effective ways to support consumers in vulnerable situations and/or facing fuel poverty. As it is also agreed by the European Commission working group on vulnerable consumers, *"measures such as homes insulation or the replacement of inefficient heating systems represent both long-term support to move consumers out of energy poverty and a concrete step towards Member States meeting the EU 2020 energy efficiency target"*⁵⁰.

⁴⁹"Evaluating the co-benefits of low-income energy efficiency programmes", IEA, 2011.

⁵⁰ "Vulnerable Consumer Working Group Guidance Document on Vulnerable Consumers", November 2013, EC. Available at: http://ec.europa.eu/energy/gas_electricity/doc/forum_citizen_energy/20140106_vulnerable_consumer_report.pdf

However, energy efficiency measures that radically improve the energy performance of buildings require significant investments. Homeowners in fuel poverty are less likely to have the capital available, whereas those in private rented accommodation are reliant on landlords who may not have sufficient incentive to invest in improving the property (known as the split-incentive barrier). Therefore energy efficiency measures for fuel poor people are largely depending on the availability of public financial schemes and regulatory measures able to provide effective answers to the above-mentioned problems ⁵¹.

At the moment there are some good examples in the EU of how countries or regions are financing energy efficiency programmes dedicated entirely or partially to vulnerable and fuel poor consumers. Some of them will be further presented in the following chapter.

⁵¹The EC Joint Research Centre held a workshop on the split incentive barrier. For more information see <http://iet.jrc.ec.europa.eu/energyefficiency/workshop/overcoming-split-incentive-barrier-building-sector-workshop>

VII. FUNDING THE SOLUTIONS: EXAMPLES ON DEALING WITH FUEL POVERTY AND VULNERABLE CONSUMERS

As analysed in the previous chapter, fighting fuel poverty and supporting vulnerable consumers can be achieved by various measures. The current chapter presents a few examples on how some European countries are implementing these measures.

7.1. BUDGET ALLOCATION TO FUEL POVERTY MEASURES IN SOME EU COUNTRIES

In the UK, a report published in May 2012 revealed that from 2008 to 2014 the overall government budget spent on fighting fuel poverty had a significant drop (-20%). From the fuel poverty budget, the income support programmes receive the highest portion (70%) while on the contrary, energy efficiency measures received only small percentage (Figure 12).

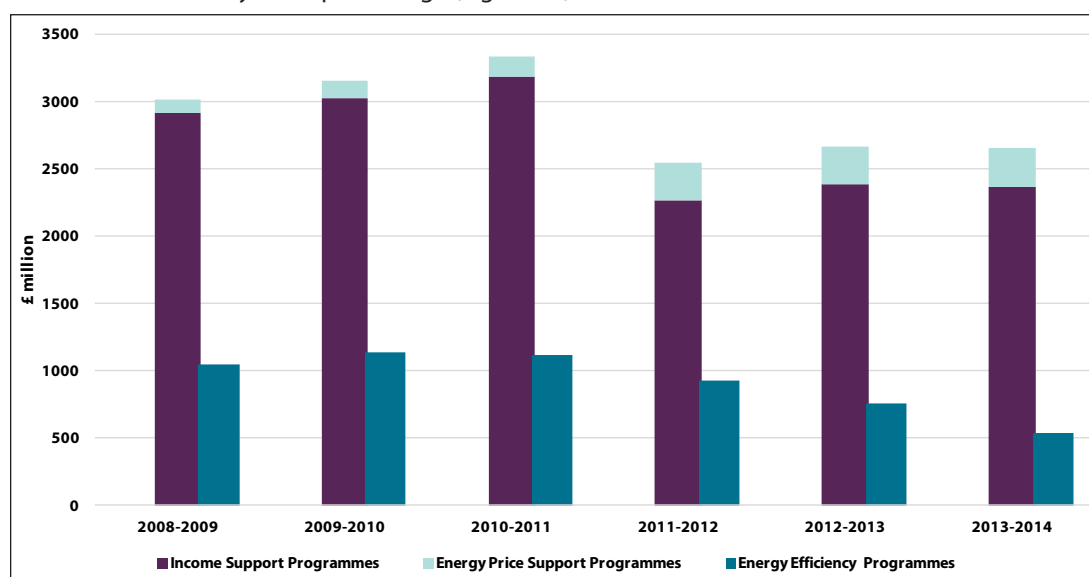


Figure 12: Total fuel poverty public expenditure in the United Kingdom⁵².

Since peaking in 2010-2011, the total budget has decreased year on year, which is expected to worsen the fuel poverty problem in the UK. This reduction affects mainly the energy efficiency schemes, which however are proven to be the most effective measures⁵³ to fight fuel poverty.

The main income support programme is the “winter fuel payments”, which accounts for two-thirds (66%) of the total budget (2013-2014). Despite the fact that this scheme spends the highest portion of the fuel poverty budget, only 12% of the recipients are thought to be fuel poor and it is even paid to seniors living abroad⁵².

Therefore, despite the fact that the UK is one of the European countries to have recognised fuel poverty as a major issue, the Government is mainly investing in an income support scheme that is not targeted at fuel poor people, as well as significantly reducing the energy efficiency schemes.

Greece, in the midst of a severe financial crisis, has the highest rate of poverty increase among the EU28 (Table 1). Additionally, in 2012 almost 30% of the total population was unable to keep their home adequately warm. Moreover, a recent study⁵⁴ showed that 62.4% of the population spends more than 10% of their total income for heating, while 78.6% admitted to using less heating than they need, due to the fact that they could not afford it.

⁵²National fuel poverty budgets”, Association for the Conservation of Energy, May 2012.

⁵³Thomson, Snell, “Quantifying the prevalence of fuel poverty across the European Union”, 2012.

⁵⁴Panas E., “Study on fuel poverty in Greece”, Athens University of Economics and Business, 2012.

To tackle this situation, the Greek government committed €650 million for oil subsidies⁵⁵ for the period 2012-2014 (approximately 580,000 beneficiaries for 2014). In the same period, only €548 million (fund: €241 million; grant: €207 million) has been allocated to “Energy Efficiency in Household Buildings”⁵⁶, the main programme supporting energy efficiency improvements in households. Up to October 2013⁵⁷, more than €406 million of the programme have been distributed to 40,000 beneficiaries. This is a very small portion of the buildings requiring direct energy upgrade, considering that more than 3,700,000 buildings were constructed before 1979, the year the *Insulation Regulation* was adopted, and consequently these older buildings have a poor energy performance rating.

“Energy Efficiency in Household Buildings” offers incentives to citizens that meet specific income-related criteria to implement energy efficiency measures in their homes. Specifically, the highest incentives are given to participants whose family income is less than €20,000 or whose individual income is less than €12,000. In these cases, the beneficiaries can receive an interest-free loan for 30% and a grant for up to 70% of the final eligible budget⁵⁸. As it is obvious, the programme involves the banks’ cooperation and for that reason, prior to programme implementation, citizens must have their creditworthiness checked. Consequently, low-income people considered as uncreditworthy borrowers by the banks, are excluded from the programme⁵⁸. Therefore, even the limited budget from the programme “Energy Efficiency in Household Buildings” cannot be used to support low-income people.

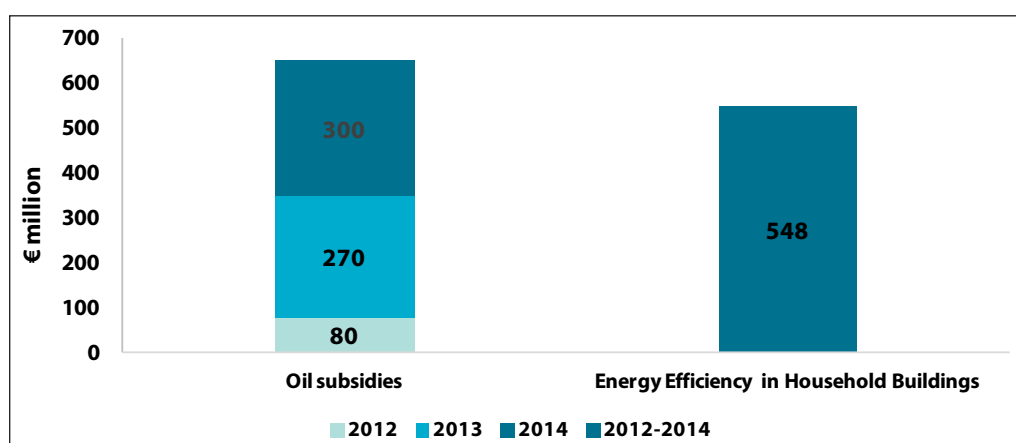


Figure 13: Budget allocation of oil and energy efficiency subsidies in Greece.

Consequently, despite the fact that energy efficiency improvements in homes have proven to be the most sustainable solution to fight fuel poverty, Greece has not established a financial mechanism to support these kinds of actions in low-income households. Instead, the Greek Government uses oil subsidies, which should have been a complementary measure, as the main instrument to deal with fuel poverty.

In Ireland, another country that has suffered seriously from the economic crisis, around 1.32 million people were at risk of poverty in 2012 (Table 1), while almost 20% of the households have been estimated⁵⁹ to be in fuel poverty. For that reason, the Government is trying to support vulnerable households by offering them access to the National Fuel Scheme⁶⁰, the “Households Benefit”⁶¹ package and the “Better Energy Warmer Homes Scheme”⁶².

⁵⁵Government Gazette 3049, 16/11/2012.

⁵⁶Ministry of Environment, Energy and Climate Change. Available at: <http://exoikonomisi.ypeka.gr/Default.aspx?tabid=629&language=en-US>

⁵⁷6,773 new beneficiaries in the programme “Energy Efficiency at Household Buildings”, Ministry of Environment, Energy and Climate Change, 7/10/2013.

⁵⁸Sarafidis Y., Hontou V., “Energy Efficiency in Household Buildings”, National Observatory of Athens, March 2014. Available at: http://www.locsee.eu/best_practice.php?id=45

⁵⁹Scott S., Lyons S., Keane C., McCarthy D., Tol R., “Fuel Poverty in Ireland: Extent, Affected Groups and Policy Issues”, ESRI Working Paper No. 262. Dublin: ESRI, 2008.

⁶⁰Public Service Information, National Fuel Scheme”. Available at: http://www.citizensinformation.ie/en/social_welfare/social_welfare_payments/extra_social_welfare_benefits/fuel_allowance.html

⁶¹Public Service Information, Household Benefits Package”. Available at: http://www.citizensinformation.ie/en/social_welfare/social_welfare_payments/extra_social_welfare_benefits/household_benefits_package.html

⁶²Public Service Information, Better Energy Warmer Homes Scheme”. Available at: http://www.citizensinformation.ie/en/housing/housing_grants_and_schemes/warmer_homes_scheme.html

The “Better Energy Warmer Homes Scheme”, which is part of the wider “Better Energy Programme”⁶³, is used to fund energy efficiency measures in low-income households. The “Better Energy Warmer Homes Scheme”⁶⁴ is considered the “*primary mechanism by which low income households are protected and represents the ideal mechanism through which efficiency based supports are channelled*”.

However, while in 2012 €76 million were allocated exclusively to the “Better Energy Warmer Homes Scheme”⁶⁵ the dedicated funds are expected to be dramatically reduced in 2014 when for the wider “Better Energy Programme” an overall budget of €57 million will be allocated (i.e. a 25% reduction as comparing to 2012)⁶⁶.

Additionally, low-income people have access to the National Fuel Scheme (NFS). The NFS supports the eligible households with €20 per week (for 26 weeks) in order to meet their heating needs. This allowance is paid for 26 weeks (32 before 2012) from October to April. In 2013, the Fuel Allowance season was extended for one week, which cost approximately €8 million. Since 2012, almost 410,000 people received the allowance, which equates to a public support level of around €211 million every year⁶⁷.

Moreover, since 2012, almost €284 million⁶⁷ per year are spent on the “Household Benefits” package of electricity and gas allowances. Approximately 410,000 people receive this benefit, the heating element of which is €420 per year. The following graph presents the precise amounts⁶⁴ (2004-2010) spent on the National Fuel Scheme and on the Households Benefits package. Additionally, for the years 2012-2014 the amounts are approximately calculated based on the aforementioned data.

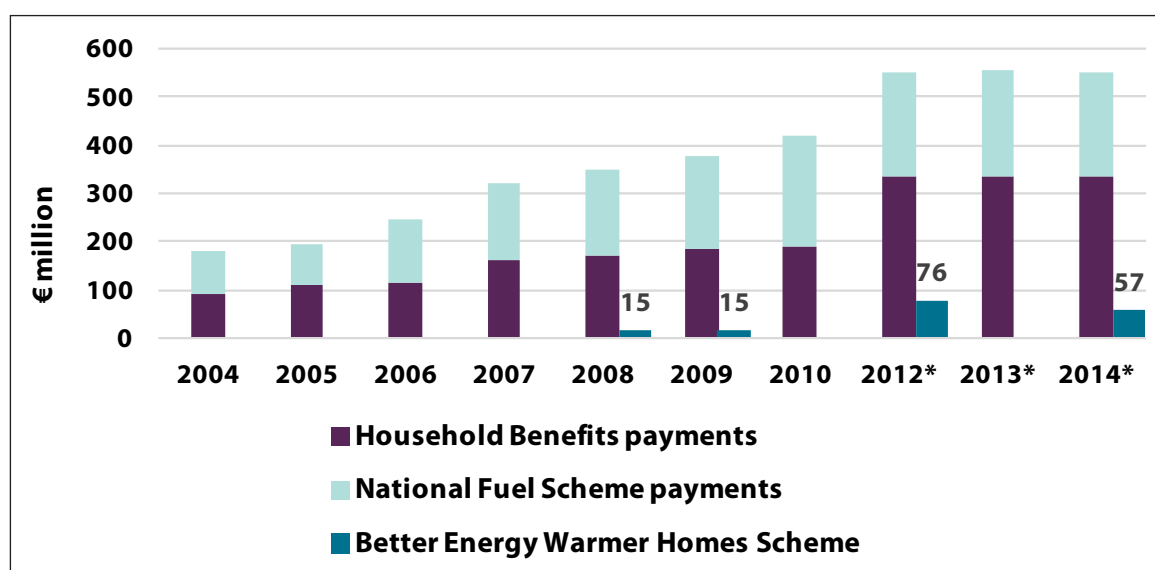


Figure 14: Budget allocation for support schemes in Ireland (2004-2014).

From the available data, it can be concluded that the energy efficiency scheme receives the lowest funding from the “fuel poverty” budget.

⁶³“Better Energy, The National Upgrade Programme”. Available at: <http://www.dcenr.gov.ie/Energy/Energy+Efficiency+and+Affordability+Division/Better+Energy.htm>

⁶⁴“Warmer Homes, A Strategy for Affordable Energy in Ireland”, Department of Communications, Energy and Natural Resources.

⁶⁵Public Service Information, Budget 2012. Available at: http://www.citizensinformation.ie/en/money_and_tax/budget_2012.html

⁶⁶“Better Energy Homes scheme to remain open through 2014”, Sustainable Energy Authority of Ireland, 2013.

⁶⁷“Minister Burton extends Fuel Allowance season”, Department of Social Protection, 2013.

7.2. ENERGY EFFICIENCY PROGRAMMES FOR FUEL POOR HOUSEHOLDS

Energy efficiency improvement is an important long-term mean to combat fuel poverty. However, mobilising the upfront-investments has strong distributional aspects and may impact the poorest part of the population. Energy efficiency policies have therefore to be designed to allow the poorest households to undertake the necessary investments and to encourage the participation of stronger investors⁶⁸.

The aforementioned energy efficiency policies are significantly affected by the tenure status of poor people. While for owner-occupied homes the economic support addresses at the same time both the owner and the inhabitant, in the case of rented homes appears the landlord-tenant dilemma and it becomes more difficult to shape a support programme due to split incentives. Therefore, different policy mechanisms, financing instruments and programmes are used to support fuel poor homeowners and fuel poor tenants throughout the EU. These mechanisms should be based on each country's economic conditions, market development and stringency of the fuel poverty problem. Tenure status of people at risk of poverty vary largely across the EU, from only 25% ownership rate in Germany and 31% in Austria to more than 80% in central and eastern EU countries such as Bulgaria, Slovakia, Hungary, Lithuania, Croatia and Romania (Figure 15). Therefore in Romania, where 95% of people at risk of poverty live in their own house and the overall economic situation of the country is below the EU average, the development of different mechanisms and support schemes is expected, compared to Germany, where the corresponding share is almost 3 times lower.

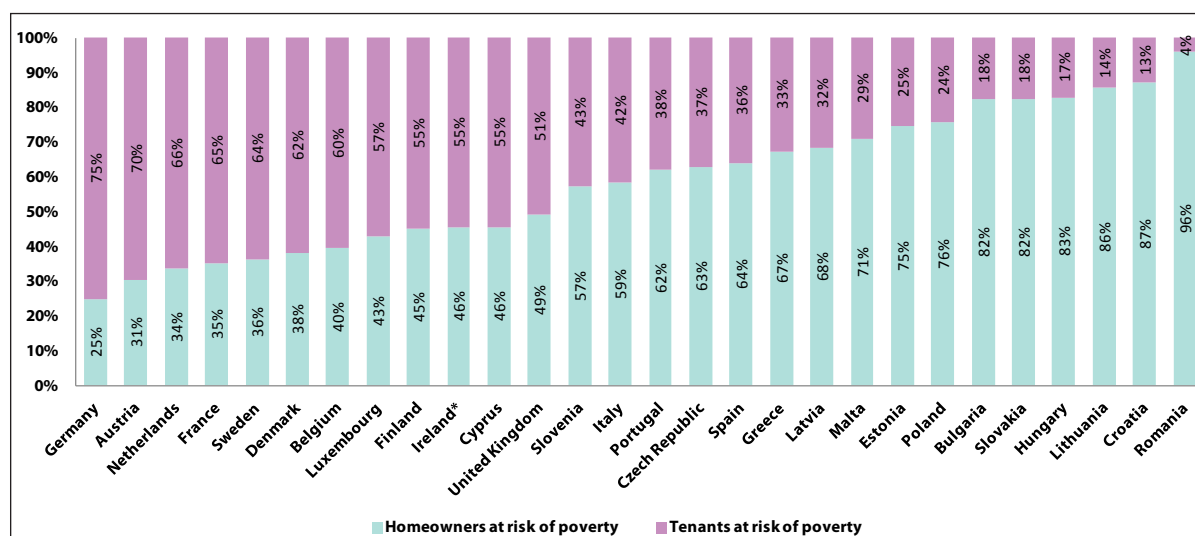


Figure 15: Tenure status of people at risk of poverty (Source: Eurostat).* Data from 2011

Moreover, even within the same country it may be indicated to design tailor-made support programmes addressing separately owner occupied and rented fuel poor homes. In addition, support schemes may be designed at the national or regional level where the fuel poverty problem is higher or the housing energy renovation may be needed due to other reasons (e.g. noise insulation near airports).

⁶⁸Financing the Energy Efficient Transformation of the Building Sector in the EU, Fraunhofer Institute for Systems and Innovation Research ISI, ADEME editions, 2012. Available at: http://www.isi.fraunhofer.de/isi-media/docs/x/de/publikationen/Building-policies_Brochure_Final_November-2012.pdf

Usually support schemes for the renovation of houses for (fuel) poor people are based on higher amounts of grants or premium while it is less likely to build more commercial and loan based financing lines due to the fact that poor people are often also not creditworthy.

Many financing schemes addressing (fuel) poor people are based to a large extent on public budgets, i.e. regional, national or EU funds. Other schemes are based on autonomous funds financed by both public and private sources. Finally, there are more sophisticated schemes such as through imposing energy savings obligations to energy companies and including dedicated financing lines addressing fuel poor or/and low-income homes (e.g. the Energy Companies Obligation in the UK). Where fuel poor people live in their own house, information regarding the benefits of energy efficiency improvements and adequate financial incentives are usually convincing measures for the adoption of energy efficiency actions. For fuel poor tenants the aforementioned measures should be supported by mandatory policies, as landlords are often unwilling to invest in their property considering that they will not benefit from the improvements. Towards this direction, the British government announced that from April 2016 landlords will not be able to unreasonably refuse requests from their tenants for energy efficiency improvements, where financial support, such as Green Deal or ECO (analysed in next paragraphs) is available. Additionally, from April 2018 it will be unlawful to rent out a dwelling with an energy efficiency rating below “E” and energy performance upgrade is possible through accessing Green Deal financing⁶⁹.

The following paragraphs present examples of programmes providing financial support to fuel poor and vulnerable consumers in several European countries.

UNITED KINGDOM – ENGLAND - WARM FRONT SCHEME

The Warm Front Scheme in England was designed to help vulnerable households lift out of fuel poverty by implementing energy efficiency measures in their homes. This programme was overseen and funded by the Department for the Environment, Food and Rural Affairs (DEFRA) and was administered by two scheme managers: Eaga Partnership Ltd and TXU Warm Front Ltd. Through the scheme, 2,324,500 households were assisted from 2000 to 2012, with a total budget of £2.843 billion⁷⁰.

Through the Warm Front Scheme, eligible households could receive a one-time grant up to £3500 for professional installation of energy efficiency measures such as for improved insulation of walls and attics, air sealing and replacement of windows and doors, etc. If more expensive measures, such as central heating installation, were required, the amount allocated to the household could reach £6000.

In 2010-2011 each beneficiary had the potential to save £610⁷¹ in energy running costs (potential saving in energy consumption of 11.2 GJ/household/year for the next 20 years), with a related reduction in CO₂ emissions in the average household from 7.5 tonnes/year to 6.0 tonnes/year.

⁶⁹“Boosting Building Renovation. An Overview of Good Practices”, BPIE, 2013. Available at: http://bpie.eu/boosting_renovation.html#U2_EstE9LX4

⁷⁰“Warm Front Scheme – Commons Library Standard Note”, www.parliament.uk, August 2013.

⁷¹“Connecting with communities-the Warm Front Scheme Annual Report 2010/11”, Department of Energy and Climate Change.

Apart from the economic and the environmental benefits, the scheme also had positive health impacts for the beneficiaries. A study⁷² conducted in 2008 showed that *Warm Front* recipients had decreased levels of anxiety and depression. As stated in the study, anxiety and depression are associated with financial pressures. Therefore, the *Warm Front Scheme*, by reducing the percentage of people reporting difficulty in paying their fuel bills (Figure 16), reduces at the same time their level of anxiety and depression. More specifically, the prevalence of anxiety or depression fell by 50%, from 300 to 150 per 1000 occupants after *Warm Front* measures, while additionally, the beneficiaries of the scheme were 40% less likely to report a high level of psychological distress.

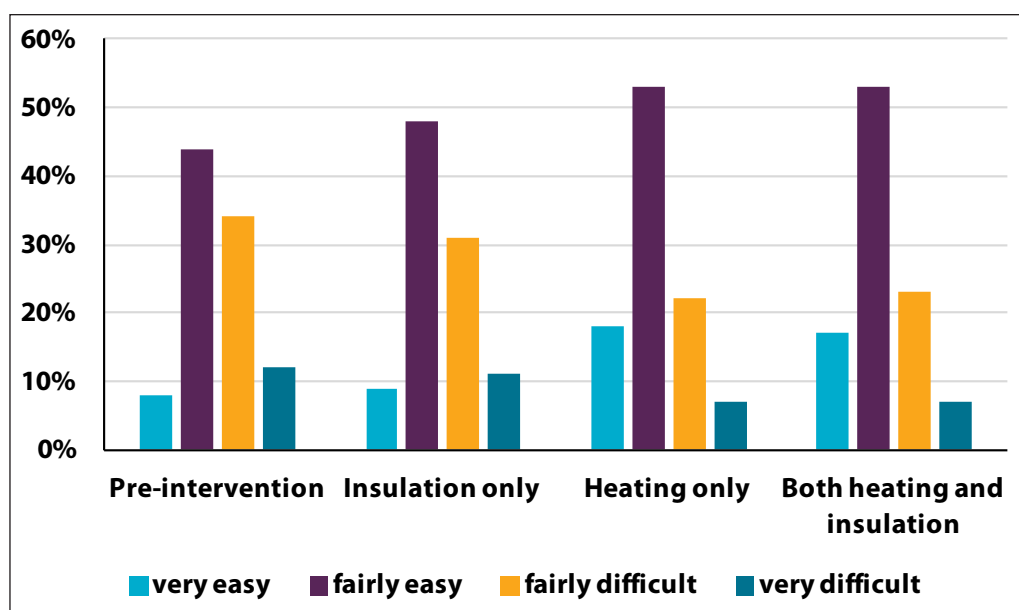


Figure 16: Difficulty in paying fuel bills⁷².

The study also highlights the positive impacts of the scheme on the mental health, as well as on the children's respiratory problems. Moreover, in the report it is stated that the rate of the winter deaths per year was reduced after the energy efficiency interventions (Table 5).

	Respiratory	Mental well-being	Mortality
Hazard	Damp/mould	Indoor cold Psychological routes	Winter low indoor temperature
Main at risk group	Children	All adults	Elderly
Baseline rate (per 1000 a year)	110	300	27 CVD deaths ⁷³
Change after renovation of heating & insulation	Dwellings with mould severity index >1 Reduced from 12% to 8.2%	Depression & anxiety reduced by 48%	2.2° C warmer
Attributable reduction after renovation, as comparing to baseline	Around 3 children fewer with symptoms	Around 150 fewer people with depression & anxiety	Around 0.4 fewer winter deaths per year

Table 5: Summary of the Warm Front Scheme health impacts.

⁷²"Health Impact Evaluation of the Warm Front Scheme", Sheffield Hallam University, May 2008.

⁷³CVD: Cardio-Vascular Diseases

UNITED KINGDOM – ENGLAND – KIRKLEES WARM ZONES

Warm Zone was a flexible programme of cooperation, in which local authorities, energy companies and other entities interested in fighting energy poverty are engaged. The aim of the programme is to identify households that need help and are at risk of fuel poverty and to support them by implementing energy efficiency improvements.

Kirklees Council invested £13.3million in the *Kirklees Warm Zone* project, while Scottish Power provided an additional £11 million. From 2007 to 2010 the project assessed 133,746 dwellings and provided energy retrofits to 70,645 homes (42,999 free loft insulations and 21,473 free cavity wall insulations)⁷⁴. For this period, the fuel expenditure saving for the recipients was more than £3.9 million per year.

The total net social benefit of the *Kirklees Warm Zone* programme was estimated to be £248.8 million, with the majority of this amount (£156 million) coming from the reduced energy bills. Moreover, the economic benefit from the savings to the National Health Service (NHS) was estimated at £4.85 million. Health benefits are mainly from improvements in mental wellbeing due to better thermal comfort, reduced utility bills and improved home safety.

Additionally, from an environmental perspective, for the next 40 years the *Warm Zones* programme is projected to save annually more than 23,000 tonnes of CO₂ emissions, while in the same period the fuel savings are estimated to reach 4,237GWh. Furthermore, due to the *Kirklees Warm Zone* 243 jobs were created and the property value increased. The following table summarises the above-mentioned benefits and presents their monetised value⁷⁵.

	Scheme Cost	Lifetime Fuel Savings (40yrs)	Lifetime CO ₂ Savings (40yrs)	Jobs Created & Economic Impact	Saving to NHS	House Value Increase	Con-firmed Benefit Claims	Net Benefit
Original Measure		4,237 GWh	934 ktonnes	243 FTE		5.6 Avg SAP increase		
Monetised Value	-£20.9m	£156m	£30.6m	£39.1m	£4.8m	£38.4m	£0.7m	£248.8m

Table 6: Kirklees Warm Zone Net Social Benefit.

The programme, by focusing on people whose health was at risk from cold and damp housing, managed to fully remove 1,375 households from fuel poverty (out of 22,618⁷⁶ in 2006) in three years while improving a large number of houses with a significant positive societal benefit far exceeding the programme's budget.

The programme ran from 2007 to December 2010, and took advantage of the Carbon Emission Reduction Target Programme-CERT⁷⁷ financing which is presented in the next case study.

⁷⁴B Edrich B., Beagley K., Webber P., Kelling S., "Kirklees Warm Zone, Final Report 2007-2010". Kirklees Council.

⁷⁵Butterworth N., Southernwood J., Dunham C., "Kirklees Warm Zone Economic Impact Assessment", May 2011.

⁷⁶Sub-regional fuel poverty data, 2006 Data, Local authority fuel poverty levels, 2006", The National Archives Department of Energy & Climate Change.

⁷⁷CERT was the energy efficiency obligation scheme that preceded ECO.

UNITED KINGDOM – ENGLAND, SCOTLAND & WALES – ENERGY SAVING OBLIGATIONS

British energy and gas suppliers serving customers in England, Scotland & Wales are obliged to meet CO₂ reduction targets through supporting households to implement energy saving measures. From 2008/09 to 2012, such obligations were fulfilled mainly through the *Community Energy Saving Programme* (CESP) and *Carbon Emission Reduction Target* (CERT) programme. Although CESP was more focused on vulnerable consumers, both schemes targeted this category of people to a significant extent.

The CERT programme started in April 2008 and ended in December 2012, following the previous obligation scheme, the *Energy Efficiency Commitment* (EEC 2005-2008). Under the *Gas and Electricity Order 2008* (Carbon Emission Reduction), the suppliers were obliged to reduce carbon emissions by 293 million lifetime tonnes CO₂, while providing almost 40% of these savings in Priority Groups (e.g. people over 70 years old) and promoting at least 16.2 million tonnes worth of carbon saving to vulnerable consumers (“Super Priority Group”, e.g. low income households receiving tax credit)⁷⁸.

By the end of the programme, it was estimated that CERT achieved the following carbon saving results⁷⁹: 41.3% of overall saving for the Priority Group and 16.6 Mt CO₂ for the Super Priority Group. From 2002 to 2011, it has been estimated that 27,000 new jobs in the insulation industry had been created by the CERT scheme and the previous Energy Efficiency Commitment scheme⁸⁰.

The CESP obligation period ran from October 2009 to December 2012 and it was administered, like CERT, by the energy regulator Ofgem, under the direction of the Department of Energy and Climate Change (DECC), which set the overall policy framework. DECC set an overall reduction target of 19.25 million tonnes of CO₂ to be achieved by the energy suppliers and generators through delivering energy saving measures to households in low income areas in Britain (defined using the Income Domain of the Indices of Multiple Deprivation)⁸¹. By the end of the programme, energy companies achieved a reduction of 16.31 Mt CO₂ (84.7%) , supporting the government’s *Fuel Poverty Strategy*. Additionally, 293,922 measures were installed in 154,364 dwellings in low income areas (Figure 17), which couldn’t have benefited from the CERT scheme⁸¹.

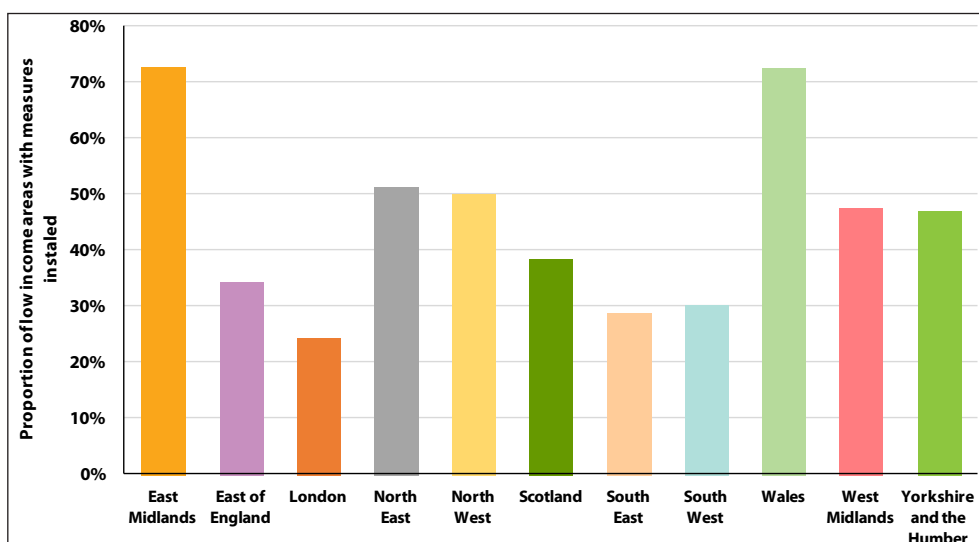


Figure 17: Percentage of low-income areas receiving measures in CESP programme⁸².

⁷⁸Office of Gas and Electricity Markets (Ofgem), supporting the Gas and Electricity Markets Authority (GEMA)

<https://www.ofgem.gov.uk/environmental-programmes/energy-companies-obligation-eco/previous-energy-efficiency-schemes>

⁷⁹“The final report of the Carbon Emissions reduction Target (CERT) 2008-2012”. Available at:

<https://www.ofgem.gov.uk/ofgem-publications/58425/certfinalreport2013300413.pdf>

⁸⁰“Local investments options in Energy Efficiency in the built environment”. Available at:

http://ec.europa.eu/energy/efficiency/buildings/doc/local_investments_energy_efficiency_built_environmentfinal_report.pdf

⁸¹“The final report of the Community Energy Saving Programme (CESP) 2009-2012”. Available at:

<https://www.ofgem.gov.uk/ofgem-publications/58763/cesp-final-report-2013final-300413.pdf>

⁸²“The final report of the Community Energy Saving Programme 2009-2012 (CESP)”, Ofgem, May 2013.

The Energy Company Obligation (ECO)⁸³ was instituted in January 2013 to replace the CERT and CESP schemes, building on their experiences. Like the CERT scheme, ECO continues to place legal obligations on the larger suppliers to deliver energy efficiency measures to domestic energy users, working alongside the Green Deal scheme⁸⁴. There are three main ECOs, two of them being specifically targeted at low-income and fuel poor households:

- *Carbon Saving Community Obligation (CSCO)*: provides insulation measures to areas characterised by low income. At least 15% of each supplier's CSCO have to be achieved by supporting hard-to-reach low-income households in rural areas; and
- *Home Heating Cost Reduction Obligation (HHCRO)*: the "Affordable Warmth Group", provides heating and insulation measures to consumers who are particularly vulnerable to cold indoor temperatures (e.g. elderly, disabled and families) and live in private tenure properties.

From January 2013 to January 2014, 507,191 households received benefits from the ECO scheme. Out of these, 102,758 participated in the CSCO programme and 272,735 in the HHCRO programme⁸⁵.

UNITED KINGDOM – WARM WALES PROGRAMME - ARBED

Arbed is a Welsh Government programme aiming to reduce the energy used in households by funding the adoption of energy efficiency measures, especially in low-income households. The scope of the programme is to reduce fuel poverty rates and at the same time boost economic development.

Arbed was established in 2009 and is divided in two phases. The first phase finished in 2012, while the second will continue running until 2015. In the first phase, the Government invested £36.6 million, thereby leveraging an additional £32 million, of which at least £20 million were invested by local authorities and around £10 million by energy companies. Throughout this period, over 7,500 households⁸⁶ (1,147 properties⁸⁷) in Wales benefited from the programme. The implemented energy efficiency measures included: window and boiler upgrades, roof extensions, as well as energy saving advice. As a result of these measures, there was a remarkable improvement in the energy classification of the properties. Before the programme, 88% of the benefited properties were classified in the second-worst F energy performance category, whereas after the improvements 91% were categorised in the C class. This improvement affected not only the properties' value, but also the CO₂ emissions which were reduced by 3,025 tonnes per year.

Additionally, savings on energy bills were estimated at £216/household/year, while the potential financial savings for all households involved in the programme were calculated at £285,000/year⁸⁷.

Furthermore, the interventions from the *Arbed* programme brought a significant increase in the comfort level of the households, as stated from the 35% of the beneficiaries who provided feedback. Additionally, 64% stated that since energy efficiency measures were installed in their homes they feel warmer in them (Figure 18).

⁸³Energy Companies Obligation (ECO). Available at: <https://www.ofgem.gov.uk/environmental-programmes/energy-companies-obligation-eco>

⁸⁴Green Deal Initiative. Available at: <http://www.greendealinitiative.co.uk/>

⁸⁵Statistics of GD and ECO up January 2013

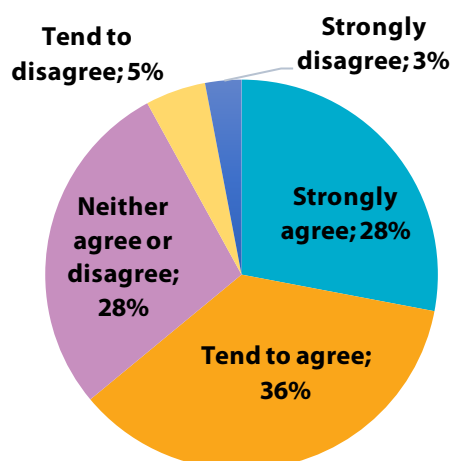
<https://www.gov.uk/government/collections/green-deal-and-energy-company-obligation-eco-statistics> and

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294353/Monthly_Statistical_Release_-_Green_Deal_and_Energy_Company_Obligation_in_Great_Britain_-_20_March_2014.pdf

⁸⁶"Arbed – Strategic energy performance investment programme", Welsh Government, March 2013.

⁸⁷"Arbed 1 Scheme, Evaluation of the Warm Wales Programme", Welsh School of Architecture, Cardiff University, August 2012.

YOU FEEL WARMER IN YOUR HOME SINCE WORK WAS UNDERTAKEN



YOUR HOME IS MORE COMFORTABLE SINCE THE MEASURES HAVE BEEN INSTALLED

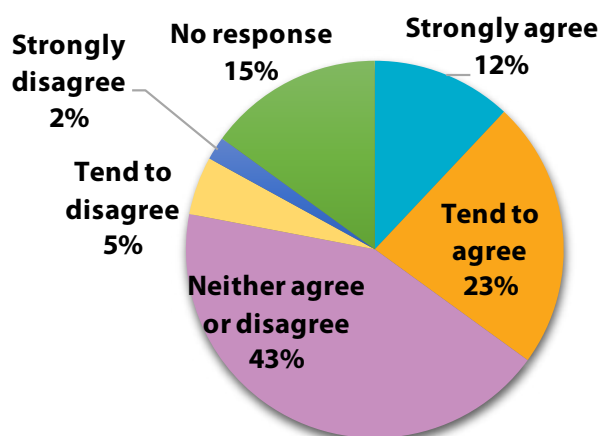


Figure 18: Households comfort level (right) and warmer feeling (left) in household, since measures were installed.

Moreover, for 49% of the beneficiaries who provided feedback, the programme also had aesthetic benefits, as they felt their homes looked better as a result (Figure 19).

YOUR HOME LOOKS BETTER SINCE THE MEASURES WERE INSTALLED

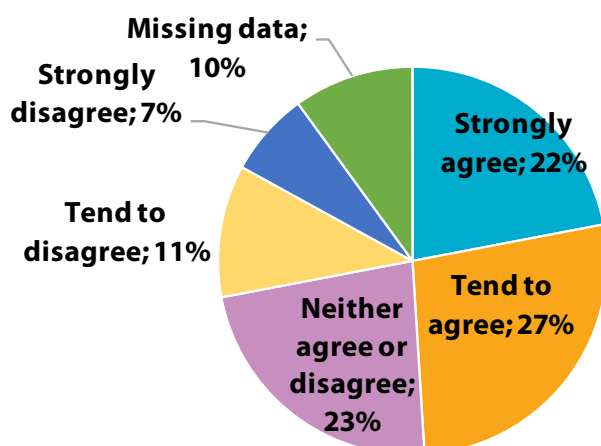


Figure 19: House looking better since the measures have been installed.

Regarding job creation, 1,704 person-training weeks were provided by the programme, ranging from short term trainee positions to 3 and 4 years apprenticeships. Moreover, fifteen energy wardens were employed and received significant training and work experience to improve their long-term work prospects.

In the second phase of *Arbed*, approximately £45 million will be invested in energy efficiency actions. This amount comprises £33 million from the European Regional Development Fund (ERDF) and £12 million from the Welsh Government. More than 4,800 existing homes will have benefited from the programme until 2015, while emissions will be reduced by 2,540 tonnes of carbon⁸⁶. Moreover, it is estimated that

⁸⁶Data provided during the visit of the Environment Minister to Rhondda on 12/11/2011. Available at: <http://wefo.wales.gov.uk/news/latest/111115welshhomes/?lang=en>

IRELAND – WARMER HOMES SCHEME

The *Warmer Homes Scheme* is “a vital pillar in the Irish Government strategy to tackle energy affordability”⁸⁹. This scheme – now known as the *Better Energy Warmer Homes* scheme – targets vulnerable and fuel poor homes, and provides advice and funds for the adoption of energy efficiency measures. The scheme is administered by the Sustainable Energy Authority of Ireland (SEAI) and involves local community organisations. The energy efficiency interventions are totally funded by the scheme and include measures such as: attic insulation, draught proofing, energy efficient lighting and cavity wall insulation.

From 2000 to 2013 over €82 million were distributed through the *Warmer Homes Scheme* and more than 95,000 homes were supported⁹⁰. Between 2006 and 2009, the benefited households saved on average €85.83 per year. Additionally, only for 2010⁹¹, the implemented measures from the *Warmer Home Scheme* resulted in saving 25 GWh and reducing CO₂ emissions by 33,000 tonnes.

The scheme resulted in a substantial percentage of the beneficiaries being lifted out of fuel poverty, as it is implied by the indicators used to measure it (Chapter 3). Specifically, the percentage of the beneficiaries⁹² who were unable (or who found it difficult) to pay the utility bills on time showed a significant decrease; the rates dropped from 48% (before the interventions) to 28%. Additionally, remarkable improvement was observed in rates regarding the ability of the beneficiaries to keep their home adequately warm. Before the implementation of the energy efficiency measures, only 27% of the families with children were able to keep a comfortable temperature at home, while after the interventions this percentage increased considerably to 71%.

Regarding the health benefits, in 2009, the Department of Social and Family Affairs published a study⁹³ evaluating the health impacts of the *Warmer Homes Scheme*. According to the study results, people benefitting from the scheme enhanced their vitality (energy and fatigue), while they also improved their general health conditions. Specifically, the number of beneficiaries who suffered from long term illness or disorders decreased by a massive 88% after the adoption of energy efficiency measures. Additionally, the recipients showed significant improvements in health problems associated with heart attacks, high blood pressure/hypertension, circulatory problems, problems with joints/arthritis, headaches, and physical and mental disability (Table 7).

Heart Attack	Asthma	Hyperten- sion	Circulatory Problems	Problems with Joints/ Arthritis	Headaches	Disability (physical/ mental)
-70%	62.5%	-56%	-64.3%	-76.5%	-83.3	-77%

Table 7: Percentage reduction of the people suffering from health problems, before and after the Warmer Homes Scheme.

Additionally, from 2009 to 2012, the Sustainable Energy Authority Ireland (SEAI) distributed more than €315 million in financial support through its sustainable energy schemes, leveraging over €500 million in private investment and supporting over 4,500 jobs per annum in the construction and energy services industries.

⁸⁹Sustainable Energy Authority of Ireland, Press release 8/3/2013.

⁹⁰“Energy Efficiency in the Residential Sector”, Sustainable Energy Authority of Ireland, 2013.

⁹¹“Ireland’s second National Energy Efficiency Action Plan to 2020”, Department of Communications, Energy and Natural Resources, 2012.

⁹²“Effectiveness of Domestic Energy Efficiency Programmes, Report 5”, Sustainable Energy Authority of Ireland, December 2009.

⁹³“Effectiveness of Domestic Energy Efficiency Programmes, Report 3”, Sustainable Energy Authority of Ireland, December 2009.

FRANCE – RENOVATION PROGRAMME OF 800,000 SOCIAL HOUSING DWELLINGS

In order to support social cohesion and respond to the economic crisis, in 2009 the European Regional and Development Fund (ERDF) regulation was amended to allow for up to 4% of national ERDF resources to be invested in energy efficiency improvements in existing housing in all Member States. France, taking full advantage of this revision, committed €320 million of the ERDF to renovate 800,000 social housing dwellings with low energy performance by 2020 (Grenelle Law). Many regions had already invested all their share of the ERDF in the programme before March 2011 and they provided additional funds to the original ERDF.

In order to better support the goals of the Grenelle Law, the government also established a favourable framework. Through this framework, the refurbishment of social housing benefits from different measures such as:

- Low fixed interest loan for social housing (éco-prêt logement social or éco-PLS);
- Grants from national public organisations (e.g. subsidy from the national energy agency ADEME for feasibility studies and energy audits, respectively covering up to 80% and 70% of the costs);
- Possibility for the owners to share the investment cost with the tenants, who may contribute based on the energy savings;
- Rebate (tax relief) up to 25% of the energy efficiency investment cost; and
- Valuation of energy measures through the *French White Certificate* scheme.

Based on the evaluation of the renovation programme⁹⁴, from February 2009 to April 2013, 58,800 vulnerable households received €233.7 million from the ERDF. The implemented measures reduced the household energy consumption by an average of 40%, saving in each one of them from €360 to €1000 annually. Moreover, the €233.7 million from the ERDF generated a total investment of €1.22 billion in the local economy, providing 17,225 additional jobs (mainly local jobs in SMEs).

ROMANIA – ERDF THERMAL RENOVATION OF BLOCK OF FLATS FOR LOW INCOME FAMILIES

As shown in Chapter 5, Romania has the second highest number of people at risk of poverty and social exclusion in the EU, i.e. around 42% of the entire population. At the same time, around 39% of the Romanian population nowadays lives in energy inefficient blocks of flats built up to 1990, almost all of them located in urban areas.

In the autumn 2013 the Ministry of Regional Development and Tourism started a new programme for the refurbishment of old block of flats, including both the envelope and the heating system⁹⁵. The programme targeted blocks of flats built between 1950 and 1990, in which the average net monthly income per family member does not exceed €500.

The programme budget is €304 million, and it is financed by the ERDF (€150 million), the balance of €154 million being provided through national sources (co-financing by the government, the local authorities and owners' associations). While 60% of the costs are covered by an equal contribution from EU and national budgets, beneficiaries are required to pay from 10% up to 40% of the expenses for the refurbishment, through the owners' association and with the additional support of local budgets. The contribution of the local authorities and owners association will vary depending on the percentage and level of low-income families in the building.

⁹⁴"L'Europe investit dans le logement social, Plan européen pour la relance économique, Evaluation 2009-2013-France", Union Sociale pour l'Habitat, 16/4/2013.

⁹⁵Government Ordinance 63/2012 amended by Law 238/2013. Available at:

http://www.regio-adrcentru.ro/Document_Files/POR-Axa1/00001270/3h0y6_OUG%2063-2012.pdf

http://www.adrse.ro/Documente/POR/Legea_238_2013_performanta_energetica.pdf

The programme aims to refurbish around 65,000 apartments by December 2015. As of March 2014 the refurbishment of 5,946 dwellings has been approved, for an overall public budget of €16 million, while until the same date the implementing agency received 108 requests covering 733 blocks of flats with an overall requested budget of €84 million⁹⁶.

The eligible measures within this programme include additional building envelope insulation (walls, roof), replacement of existing windows with double glazed ones and improvements to communal heating systems. These measures aim to reduce the energy demand of the apartments from an average 180kWh/m²/h to below 100kWh/m²/yr. Furthermore, the programme completion is expected to reduce the energy consumption for heating by 40%, while the overall energy savings are estimated to 260GWh/yr. Additionally, during the course of the programme around 5,000 jobs are estimated to be created and maintained.

LITHUANIA – MULTIFAMILY BUILDINGS RENOVATION PROGRAMME THROUGH THE JESSICA HOLDING FUND

Since the early '90s, Lithuania has attempted to undertake the modernisation of apartment blocks. After considering the results of the first pilot project financed by the World Bank from 1996 to 2004, the Government approved the *Multi-Family Housing Building Modernisation* programme in September 2004. However, the programme ran out of funds in 2007, lacking to provide substantial support to vulnerable consumers, despite the fact that 50% of the investment cost was covered by subsidies⁹⁷.

In 2009, the Lithuanian government signed a funding agreement with the European Investment Bank (EIB), establishing the Lithuanian JESSICA Holding Fund (HF) for multi-family building renovation. This fund was capitalised with an initial investment of €227 million – €127 million from the European Regional Development Fund and €100 million in national funding. The project included the participation of housing administration companies, municipalities, commercial banks (selected by calls), engineering consultancies, contractors and the Housing and Urban Development Agency.

The Fund offers long-term loans with a fixed interest rate (3%) for the improvement of energy efficiency in multifamily buildings, while for applicants and families on low incomes, up to 100% of the loan can be converted into a grant⁹⁸. However, the implementation of the Fund showed⁹⁹ that the combination of loans with non-refundable grants was a more attractive option for homeowners.

According to the EIB, the apartment block renovation project pipeline is building up, with potential for more than 3,000 building projects (1500 of them have already been funded). From 2005 to the end of 2012, 479 multifamily buildings have been renovated, providing energy savings of 82,258 MWh/year and a reduction of CO₂ emissions of 20,884 tonnes/year. The Vilnius University evaluated similar outcomes¹⁰⁰, while additionally estimating that by 2015, due to the renovation of 1000 multi-apartment buildings, gas imports will be reduced by 1,346,801m³/year (0.5% of the national needs).

For the period 2008-2010, prior to the JESSICA Holding Fund, the programme was evaluated by the Housing and Urban Development Agency¹⁰¹. In 2010, 33% of the beneficiaries admitted that their income was low and almost all their money was spent on food and on the maintenance of the apartment, while 16.8% of them were already receiving heating subsidies. Although the renovation subsidies covered up to 44.5% of the improvement cost, for 28% of the beneficiaries the loan had a significant impact on their budget.

⁹⁶ Presentation of Romanian Ministry for Regional Development and Public Administration at BPIE/ENTRANZE event from Bucharest, 4 April 2014.

⁹⁷ "Experience of Lithuania in housing refurbishment", Housing and Urban Development Agency, Lithuania, March 2012.

⁹⁸ "Housing renewal under the new apartment house renovation funding model". Available at:

<http://www.atnaujinkbusta.lt/index.php/lt/f/atnaujink-busta/duk/busto-atnaujinimas-pagal-naujaja-daugiabuciu-namu-atnaujinimo-modernizavimo-programa/?m=1&offset=10>

⁹⁹ "Financing the energy renovation of buildings with Cohesion Policy Funding", DG Energy.

¹⁰⁰ Bumelyte J. et al, "Energy Efficiency Investments in Housing", Vilnius University, Lithuania, 2011.

¹⁰¹ Available at: <http://www.bkagentura.lt/index.php?1922105018>

Nevertheless, most of the people decided to take part in the programme in order to improve their thermal comfort (36.9%) and reduce their energy consumption (41.7%). Indeed, the renovation drastically improved thermal comfort levels (Figure 20), while additionally increasing the percentage of people involved in the community activities (from 50% to 69%).

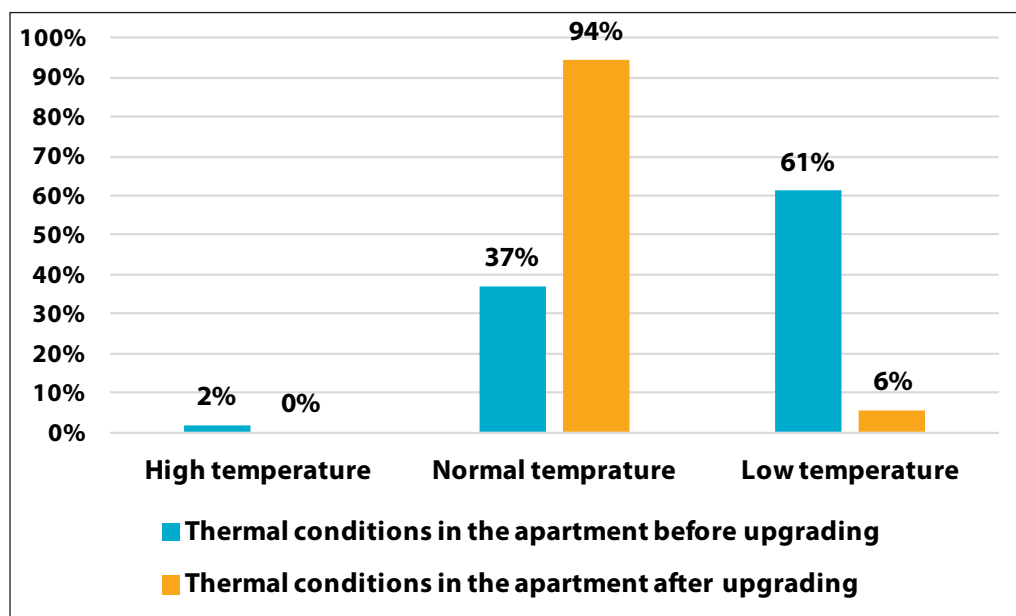


Figure 20: Thermal condition before and after the renovation.

In 2012, a study¹⁰² showed that an increasing number of people (from 67% in 2011 to 76% in 2012) agreed that the process of renovation improves the quality of life. However, during the same period more people (from 40% in 2011 to 59% in 2012) declared they were unable to participate in the programme due to financial barriers.

¹⁰² Available at: <http://www.atnaujinkbusta.lt/index.php/lt/p/atnaujink-busta/apie-programa/stebesena>

VIII. EU COHESION FUNDS: A SOLUTION TO FINANCE MEASURES FOR FUEL POOR AND VULNERABLE CONSUMERS

The *Regional Policy* of the European Union (EU), also referred as *Cohesion Policy* is the European Union's strategy to "promote and support the overall harmonious development of its Member States and Regions"¹⁰³ aiming to improve the welfare of the EU countries and to avoid economic disparities. The *Cohesion Policy* is one of the European Union's major policies having allocated around one third of the EU's budget. Nowadays, the Cohesion Policy is aligned to the ambitious objectives that Europe has set regarding employment, innovation, climate change, education and poverty.

The *Cohesion Policy* has three financial instruments:

- The European Regional Development Fund (ERDF);
- The European Social Fund (ESF); and
- The Cohesion Fund.

While all EU regions may benefit from the ERDF and the ESF – also known as *Structural Funds* – only less developed regions may be supported from the *Cohesion Fund*.

For the period 2007 – 2013¹⁰⁴, EU support for the *Cohesion Policy* amounted to €347 billion – 37.5% of the total EU budget. Of that, €277 billion was allocated to the Structural Funds and €70 billion to the Cohesion Fund. The *Cohesion Policy* funding for 2014-2020¹⁰⁴ amounts to €351 billion (current prices), with €287.5 billion for the Structural Funds and €63.4 billion for the Cohesion Fund.

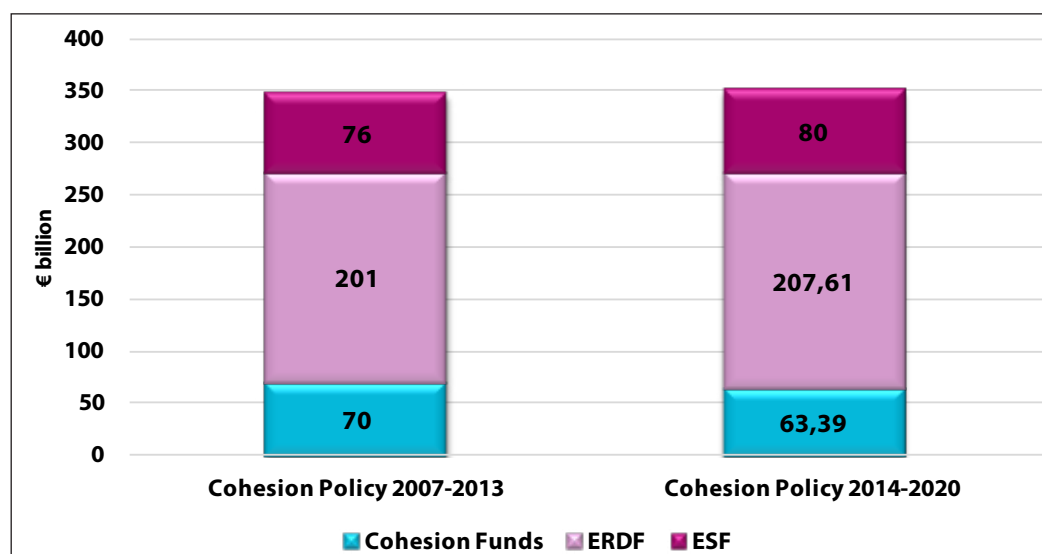


Figure 21: Available budget for the Cohesion Policy 2007-2013 & 2014-2020.

The Cohesion Policy budget distribution to the EU countries shows that the countries receiving the highest part of the Cohesion Policy budget (Figure 22) are also among those with the highest number of poor people (Table 1).

¹⁰³Regional Policy – INFOREGIO: http://ec.europa.eu/regional_policy/index_en.cfm

¹⁰⁴EU cohesion funding – key statistics: http://ec.europa.eu/regional_policy/the_funds/funding/index_en.cfm

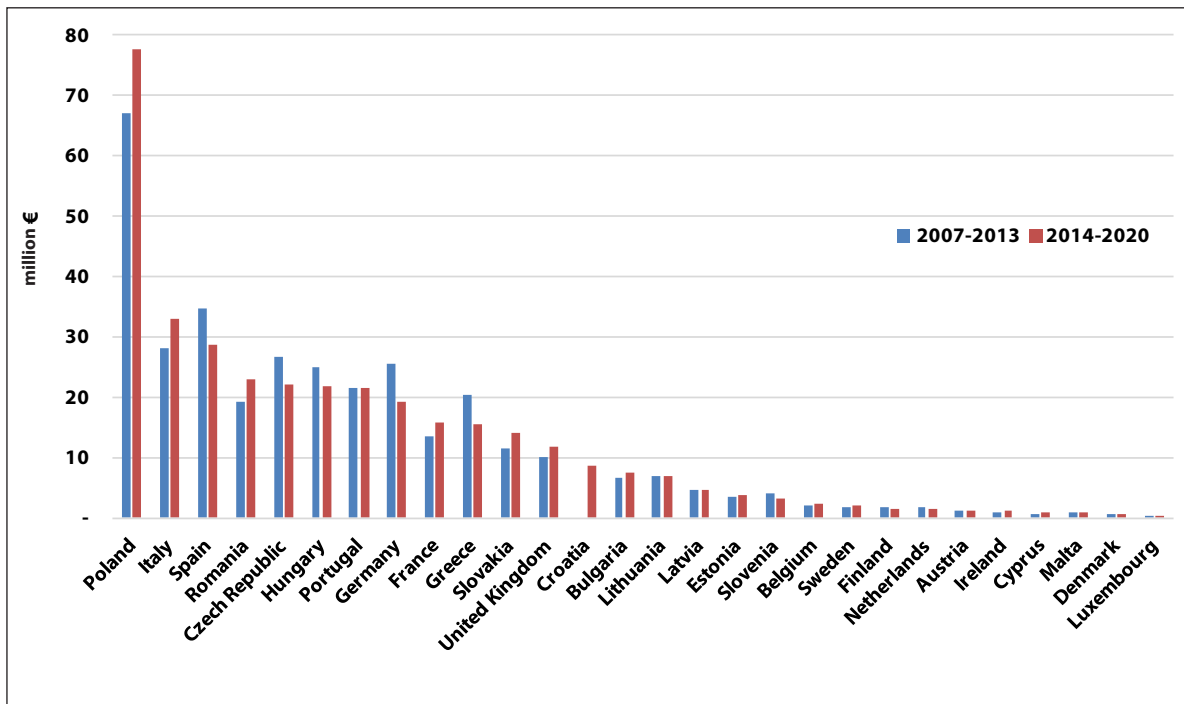
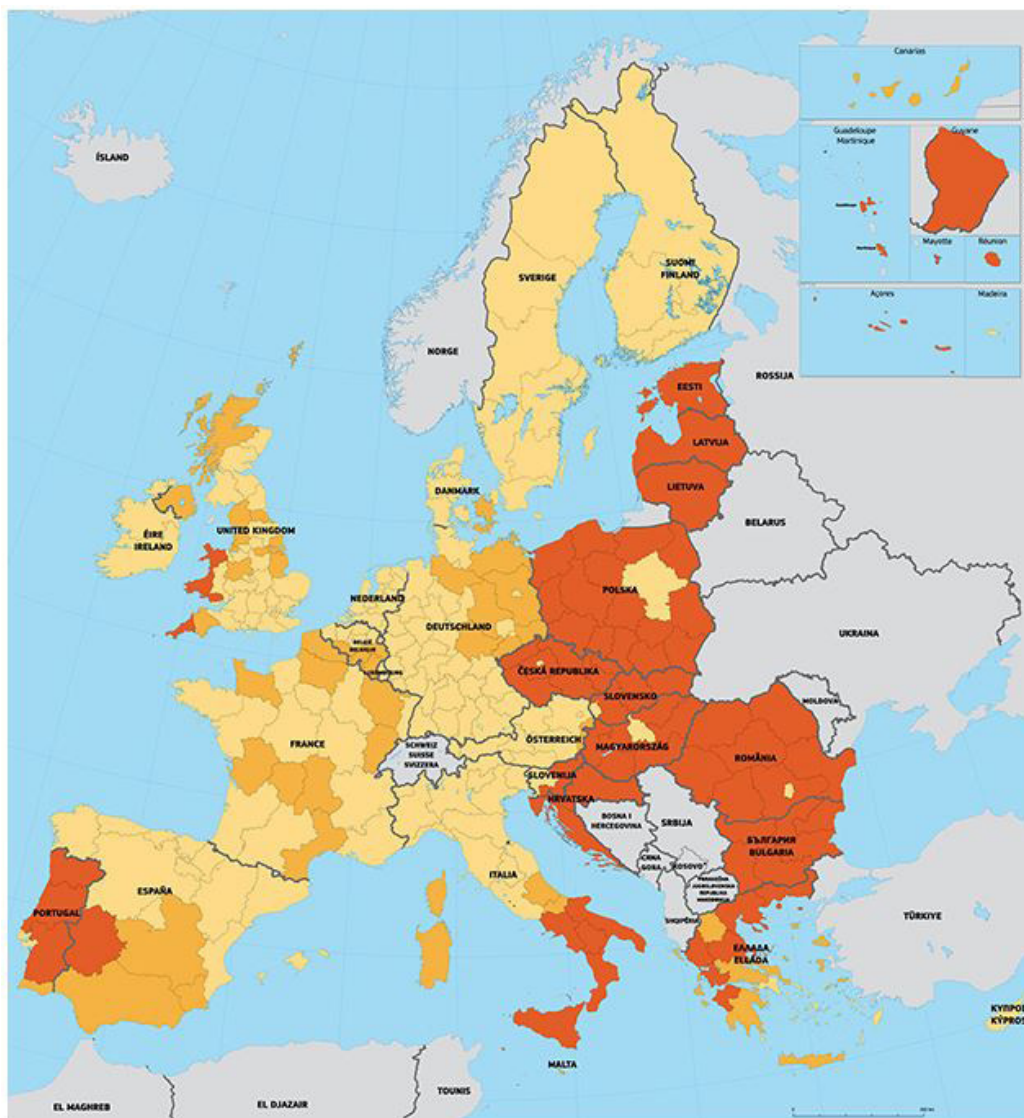


Figure 22: Allocation of Cohesion Policy funding per country (Source: DG for Regional Policy).

Moreover, the distribution of the *EU Cohesion Funds*, based on the development level of the regions compared to the EU average (Map 4), shows a strong link between less developed regions and regions having the highest shares of households affected by energy wastage, low indoor temperatures and arrears on energy bills (Maps 1,2 and 3).



- Less developed regions (GDP/head < 75% of EU-27 average)
- Transition regions (GDP/head between 75% and 90% of EU-27 average)
- More developed regions (GDP/head \geq 90% of EU-27 average)

Map 4: Cohesion Funds map according to the EU regions' development level (Source: European Commission, European Social Fund).

In the 2007-2013 period, out of the €347 billion of the *Cohesion Policy* around €10 billion were allocated to sustainable energy projects¹⁰⁵. This financial period, regarding the funding of energy efficiency and renewable energy measures in the building sector, is divided in two parts, before and after May 2009.

¹⁰⁵“Financing the energy renovation of buildings with Cohesion Policy funding”, A study prepared for the EC, 2014.

Until May 2009, based on the Regulation No 1080/2006¹⁰⁶, *Structural Funds* for investments in housing could only be used in multi-family and social housing as well as in public buildings and only by those Member States that acceded to the EU on or after 1/5/2004. Additionally, these kind of expenses could be funded provided the allocation to housing expenditure was either a maximum of 3% of the ERDF allocation to the operational programme concerned or 2% of the total ERDF allocation.

In May 2009, in an amendment¹⁰⁷ to the aforementioned regulation, a special adjustment for funding the expenditure on energy efficiency improvements and on the use of renewable energy in existing housing was adopted. Based on this regulation, *“in each Member State, expenditure on energy efficiency improvements and on the use of renewable energy in existing housing shall be eligible up to an amount of 4% of the total ERDF allocation”*. This amendment gave all Member States the opportunity to use a limited share of the ERDF as a financial tool for energy efficiency improvements in the existing housing with no restrictions on the building type (e.g. public or not).

A wider opening up of the Structural Funds to support building improvements took place in April 2010, when expenditure on housing became an additional eligible cost for *“all Member States only within the framework of an integrated approach for marginalised communities”*¹⁰⁸. This type of investment could be funded provided the allocation to housing expenditure was either a maximum of 3% of the ERDF allocation to the operational programme concerned or 2% of the total ERDF allocation.

Despite all the aforementioned restrictions, from the 2007-2013 Cohesion Policy allocations, approximately €5.1 billion were used for energy efficiency and €4.9 billion for renewable energy projects¹⁰⁹. Out of the €10 billion invested in energy related projects, around half (€5.5 billion) were allocated in only three countries: Poland, Italy, and the Czech Republic. Moreover, Malta, Latvia and Italy are the countries that committed the highest percentage of their national Cohesion Policy Funds for energy related investments (10.81%, 7.42%, 6.66% correspondingly), with the EU average being 3.57% (Figure 23).

¹⁰⁶Regulation No 1080/2006 of the European Parliament on the ERDF.

¹⁰⁷Regulation No 397/2009 of the European Parliament and of the Council, amending Regulation No 1080/2006.

¹⁰⁸Regulation No 427/2010 of the European Parliament and of the Council, amending Regulation No 1080/2006.

¹⁰⁹Skäringer M., “Cohesion Policy support for Energy Efficiency Investments”, presentation from the European Commission, 23-24/10/2012.

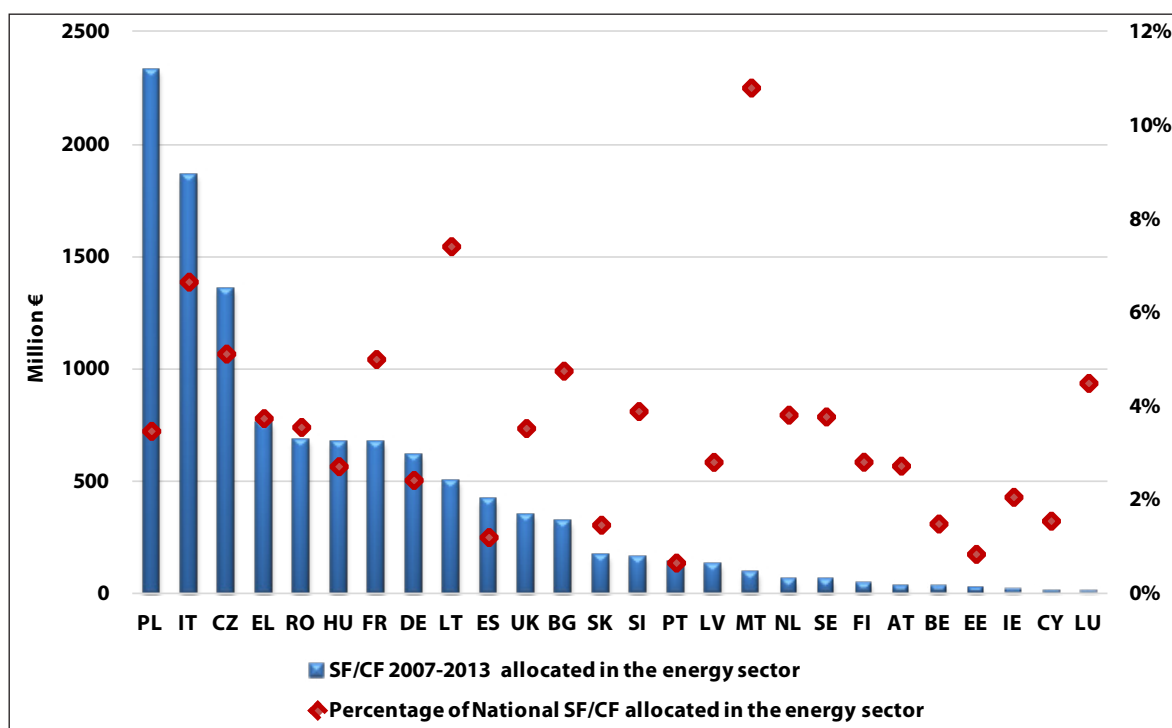


Figure 23: Cohesion Policy Funds 2007-2013 allocated in the energy sector (Source: DG for Regional Policy).

The amounts allocated to energy projects are expected to double over the coming years, as the Cohesion Policy 2014-2020 foresees that €23 billion, coming only from the ERDF, will be invested in low-carbon schemes¹¹⁰. The *Cohesion Policy 2014-2020*¹¹¹ sets a minimum share (12% for less developed regions, 15% for transition regions, 20% for more developed regions) of the total ERDF resources at national level that need to be allocated to actions supporting the shift towards a low-carbon economy in place of the 4% upper threshold of the ERDF that could be invested in energy efficiency measures in residential buildings. Moreover, part of the €63.4 billion allocated to the *Cohesion Fund* are from now on available to support energy efficiency and renewable energy investments in housing, but no additional details on the budget allocation have been published.

Turning to the *European Social Fund*, every year the ESF¹¹³ assists over 15 million people by promoting employment and social inclusion and by combating poverty. The *Cohesion Policy 2014-2020* sets a binding minimum ESF share for the first time in each Member State. This means that at least 23.1% – around €80 billion (at current prices) – of the total *Cohesion Policy* funds should be allocated to ESF. Additionally, 20% of the ESF should be used to support social inclusion. As a result, around €16 billion will be allocated to people facing difficulties and to those from disadvantaged groups. Furthermore, in a move towards an environmentally sustainable economy, the ESF can also fund actions aiming to support the creation of new jobs in sectors related to the environment and energy, including in the construction sector, responsible for buildings' renovation and with a very high job intensity.

From the aforementioned, it can be concluded that a significant share of the *Cohesion Policy* budget can be used for energy efficiency actions in the residential sector, as a measure of relief for weaker members

¹¹⁰EU Cohesion Policy 2014-2020, Targeting Investments on Key Growth Priorities", European Commission.

¹¹¹Regulation No 1301/2013 of the European Parliament and of the Council on the ERDF.

¹¹²Regulation No 1300/2013 of the European Parliament and of the Council on the Cohesion Fund.

¹¹³Regulation No 1304/2013 of the European Parliament and of the Council on the ESF.

of society. In these cases, when energy efficiency improvements are used as measures that addressing fuel poverty and supporting vulnerable consumers, high grant intensities could be allocated. Therefore, it is important to look at the energy efficiency projects in a broader context and evaluate all the benefits they offer, such as their economic, social and environmental impacts. This in-depth evaluation may result in more cost effective projects overall, while it can additionally be used to justify the need, the relevance and the legitimacy of energy renovation of buildings projects to local decision makers, politicians and co-founders.

In summary, measures related to energy efficiency in buildings can be supported by all three *Cohesion Policy* financial instruments. In the period 2014-2020, €23 billion (7% of the total budget), coming from the ERDF will be used for low carbon schemes, while ESF and *Cohesion Fund* can also be used as financial sources for energy efficiency improvements. By contrast, from the Cohesion Policy 2007-2013 budget only €10 billion (3% of the total budget) were invested in energy efficiency and renewable energy projects (Figure 24). This opening of the *Cohesion Funds* to energy efficiency improvements is expected to trigger a significant amount of private funds. It has been estimated that €1 of subsidy in energy efficiency projects can leverage €9 to €12.50 of private funding¹¹⁴. Consequently, on top of the €23 billion foreseen in *Cohesion Policy 2014-2020* for low carbon schemes, an additional €207-287.5 billion of private funds could be invested in energy efficiency projects. Furthermore, Copenhagen Economics estimated that by achieving the potential for energy efficient renovation in buildings by 2020, EU Member States may achieve annual benefits worth €104 billion in its low EE scenario, and €175 billion in its high EE scenario¹¹⁵.

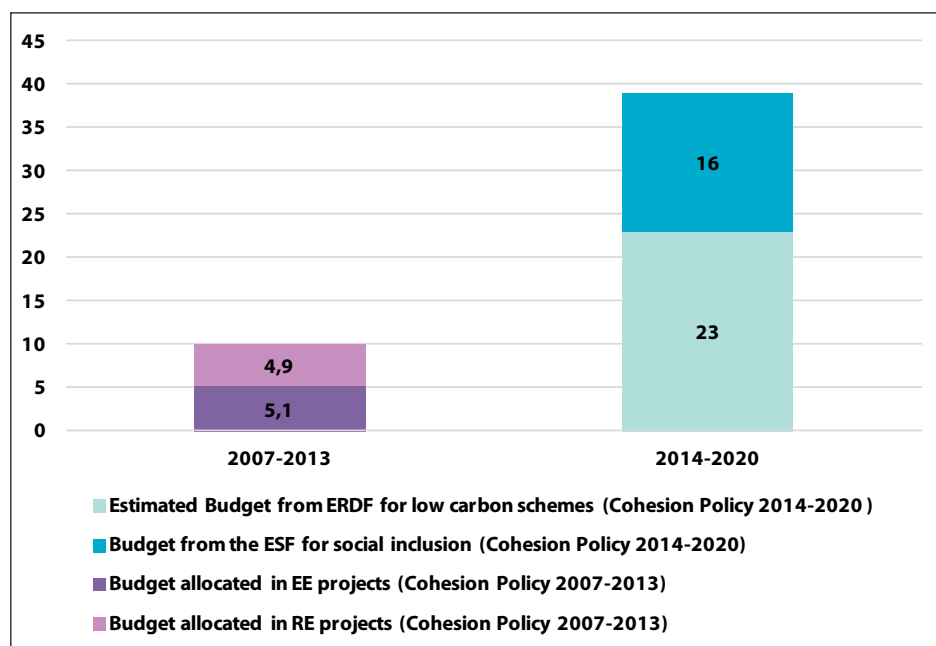


Figure 24: Potential budget from Cohesion Policy Funds for energy efficiency and renewable energy investments.

¹¹⁴"The KfW experience in the reduction of energy use in and CO₂ emissions from buildings: operation, impacts and lessons for the UK" UCL Energy Institute.

¹¹⁵"Multiple benefits of investing in energy efficient renovation of buildings", Copenhagen Economics, Commissioned by Renovate Europe, 2012. Available at: <http://www.renovateurope.eu/uploads/Multiple%20benefits%20of%20EE%20renovations%20in%20buildings%20-%20Full%20report%20and%20appendix.pdf>

IX. CONCLUSIONS AND POLICY RECOMMENDATIONS

CONCLUSIONS

Up to a quarter of the EU population, between 50 and 125 million people, are currently can not afford having a comfortable indoor environment due to prices of energy consumption. These people are living with the risk of health damages and social exclusion.

Many MS recognise this social problem, even though there is no single definition of fuel poverty. Different terms are used to describe people affected: fuel poor, energy poor, vulnerable energy consumers or, to a larger sense, at-risk-of-poverty or low-income people.

National policies addressing fuel poor and low-income households vary from social energy tariffs and heating subsidies towards more complex programmes improving the energy performance of dwellings.

Social tariffs and heating subsidies are measures with potentially lower annual costs than investing immediately in deep renovation of fuel poor dwellings. However, they have to be allocated every year and address only partially the problem. They are passive investments from public budgets without generating added value or economic growth. The economic crisis increased the number of people at risk of poverty and in particular fuel poverty, while the situation is accentuated by Europe's ageing population. Therefore, social tariffs and energy subsidies cannot give a sustainable answer to the fuel poverty problem.

Measures aiming to improve the energy performance of fuel poor homes reduce heating energy bills in a sustainable way, allowing people to afford warmer indoor environments. Additionally, energy efficiency improvements do not need continuous funding. Public resources in a given year provide lasting benefits over many years. The more ambitious the renovation, the longer the predictability of the results and the higher the guarantee of energy affordability for the inhabitants. Therefore, energy efficiency improvements are sustainable solutions address the problem at its roots.

Energy saving investments are initially more costly than other options addressing fuel poverty, due to higher up-front capital to be invested. People having difficulties in securing their energy needs also have problems in investing in their homes. Therefore, there is a strong need for public financing support, from both national and EU funds, particularly in ways that leverage additional private funding.

Renovation programmes triggered by social reasons can generate multiple economic and societal benefits. Specifically, the implementation of energy efficiency measures in vulnerable households can create or maintain jobs in construction related sectors, reduce illness and death incidents caused by cold homes, rehabilitate poor districts and contribute in this way to social inclusion. At the same time, these actions support the energy and environmental goals of the EU. Therefore, these types of measures are a much better investment of public money, offering not only a palliative solution, but contributing to the wider social and economic objectives of the EU.

Based on the analysis presented in this study, a number of policy recommendations should be considered to establish a more effective policy landscape to address the problem of fuel poverty across the EU.

POLICY RECOMMENDATIONS

- **A higher allocation of EU Funds to renovation programmes targeting fuel poor, low-income and vulnerable categories of people.** While delivering more benefits, renovation measures addressing vulnerable categories of people require more public support. The EU *Cohesion Funds 2014-2020* have a higher (compared to 2007-2013 period) share allocated to energy renovation of buildings, while offering even more financial opportunities when these measures also address social issues. Moreover, there is a significant similarity between less developed regions addressed by the EU Funds and regions with most vulnerable and fuel poor households. Therefore, there is a great opportunity to design national dedicated programmes to renovate these homes by using EU Funds and by leveraging national contributions. Such programmes can significantly contribute to achieving the social, environmental and energy goals set by the EU for 2020, while at the same time supporting economic growth and social inclusion.
- **Dedicated national programmes addressing the fuel poverty problem.** The Energy Efficiency Directive (EED, 2012/27/EU) offers a good framework for supporting such measures at national levels. The national plan to stimulate investments in building renovation, as required by Article 4 of the Directive, should include national programmes addressing low-income and fuel poor people. Moreover, under the EED Art 7, energy efficiency obligation schemes may be introduced, with dedicated components addressing fuel poor and vulnerable consumers.
- **Top priority at national levels, shifting price control mechanisms and fuel subsidies to more active and effective public expenditure on renovation measures.** As presented in this study, the level of subsidies allocated to fuel poor people in some countries is much higher than budgets allocated to energy renovation programmes. The energy subsidies are almost passive public expenditures and only maintain the status quo offering just a temporary support to fuel poor people and not a sustainable solution addressing the cause of the problem. On the other hand, renovation programmes tailor-made for (fuel) poor dwellings deliver several direct and societal benefits including a significant improvement of the energy performance of fuel poor homes that can eradicate the problem. Shifting public budgets from energy subsidies to renovation programmes in a careful stepwise approach will result in a far greater and lasting benefit to families in fuel poverty, while at the same time generating a range of societal benefits.
- **A more accurate definition of societal groups that cannot afford sufficient energy to satisfy their basic needs.** Fuel poverty is an approach that is more developed and addressed in the UK and Ireland, while other countries are more focused on low-income or at-risk-of-poverty people. Fuel poverty is a major social problem at the EU level and its solution is part of EU's smart, sustainable and inclusive growth goals by 2020. Therefore, the EC should consider the fight against fuel poverty as a priority to be mainstreamed in all related policies. Nevertheless, the EC established a working group on vulnerable energy consumers¹¹⁶; this is a good platform from which further develop better definitions and approaches.
- **Improvement of statistical data collection by providing more evidence on the scale and impact of fuel poverty in the EU.** While Eurostat and National Statistics Institutes provide good evidence of people at-risk-of-poverty and some indicators related to housing conditions and energy bills arrears, there is a need to have more linkage between these data in order to better identify the relationship between housing conditions, fuel poverty and other drivers of people's vulnerability on energy issues.

¹¹⁶More info at: http://ec.europa.eu/energy/gas_electricity/forum_citizen_energy_en.htm

- **Need for a long-term strategy for fuel poverty alleviation in the EU.** Long-term policy predictability is needed because of the size of the problem and its importance in reaching the EU socio-economic, energy and climate goals. As it is presented in this report, around one quarter of the EU population is at risk of poverty and an important part of them are also living in fuel poverty and are vulnerable energy consumers of the Union. Therefore, the introduction of an EU-wide energy saving target for 2030 including binding measures on improving the energy performance of the EU building stock will trigger predictable and coherent actions and release investments addressing fuel poverty.

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