

## Measuring energy poverty in Greece

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### HIGHLIGHTS

- 58% of Greek households are energy poor.
- 75% of Greek households have reduced other essentials in favor of energy needs.
- Combination of objective and subjective indicators captures better energy poverty.
- Greek energy policy has failed to tackle energy poverty issues.

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### ABSTRACT

A comprehensive research in the field of energy poverty is undertaken in this paper, in an attempt to highlight the great vulnerability of Greek households on energy poverty, in the middle of a severe economic crisis. Till now, Greek energy policy has been considered insufficient to tackle energy poverty issues, as focusing mainly on short-term rather than permanent solutions. A primary survey has been conducted, recording objective data of energy expenses as well as subjective perceptions about housing conditions. The findings showed that, under the objective expenditure-based method, 58% of Greek households are energy poor. Among households under the poverty threshold, the energy poverty rate exceeds 90%. Existing and new subjective indicators shed light on other aspects of energy poverty, such as the level of thermal comfort at home, damp problems detected, restriction of other essential needs in order to manage energy payments, etc. Some interesting conclusions are also drawn by exploring the relationship between various indicators. It appears that households considered energy poor are not identical when examined by objective and subjective indicators. However, different indicators complement each other by capturing different aspects of the problem and provide a broader overview of the issue.

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### 1. Introduction

Energy/fuel poverty has evolved into an increasingly urgent problem in Europe, in recent years. Energy demand is constantly increasing, and, despite the last temporary pictures of a rather cheap oil market, energy prices are expected to reach high levels again (IEA, 2015). At the same time, a lot of European countries have been burdened by austerity policies. Overall, this trend steadily worsens the energy poverty problem. Energy poverty has been defined in many different ways by different researchers and institutions for over three decades now (e.g. Lewis, 1982; Boardman, 1991; Buzar, 2007; Bouzarovski et al., 2012; EESC, 2013 etc.) and can be summarized in the difficulty or inability of a household

to afford an adequate coverage of its energy needs (heating comfort and other essential energy services), due to high cost of energy, low household income and building's energy inefficiency, or a combination of them. Practically, the prevalent approach to defining energy poverty in literature is that of UK, according to which a household is considered fuel poor if, in order to achieve an adequate standard of warmth, it is required to spend more than 10% of its income on energy. The adequate standard of warmth is usually represented as 21 °C in the living room and 18 °C elsewhere at home (DECC, 2015).

It has been estimated that between 50 and 125 million people in Europe are fuel poor (EPEE, 2009) while a more recent research (BPIE, 2014) reports that rates of fuel poverty range from 9.7% to 15.11% of the European population, though noting that rates vary considerably across different Member States. Indeed, a more accurate estimation of the problem at European level is hindered by the lack of common indicators addressing the problem. Yet, the

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importance of the problem as well as its serious social, political, environmental and welfare implications have been widely recognized. Welfare implications comprise indoor air pollution along with its impact on physical and mental illnesses (BPIE, 2014), lower participation in social activities and lower quality of life.

The research of BPIE (2014), which studies the extent of energy poverty in whole Europe by using three proxy indicators (i.e. arrears on utility bills, inability to keep home adequately warm and dwellings with leakages and damp walls), shows that Bulgaria, Greece and Cyprus, are the countries with the most acute energy poverty issues in Europe, although countries with mild climatic conditions.

Greece is in the midst of a severe economic crisis, with serious effects on the Greek population. In 2013, Greece was ranked third among the EU28 Member States being at risk of poverty or social exclusion (35.7% of the population) and first on poverty increase between 2009 and 2013 (Eurostat, 2015). Since 2009 (the outbreak of the economic crisis) and within 6 years of austerity policies imposed, the Gross Domestic Product (GDP) of the country has fallen by 25%, as shown on Fig. 1 (Eurostat, 2015). At the same time, fuel prices have marked a substantial rise within these years, as displayed in Fig. 2 (Eurostat, 2015; Weekly Oil Bulletin, 2015). Especially heating oil, which represents 44.1% of the total energy consumption in Greek households (Hellenic Statistical Authority, 2013), presented a price increase of 89% between 2009 and 2013. More specifically, as part of the austerity policies and the tax raises imposed, heating oil reached the price of 1.4 €/lit during the winter period of 2013–2014. Only the last two years (2014–2016) the situation seems to improve, with fuel prices dropping again, in, theoretically, affordable levels, due to global prices reduction. On the other hand, electricity price has been growing slowly but steadily since 2009.

Additionally, arrears in electricity bills today exceed 2 billion€, versus 700 million€ in the beginning of the economic crisis and 1.7 billion€ in the end of 2014. At the same time, economic arrangements and electricity supply cuts have remarkably multiplied. The income per capita has also considerably shrunk during the period of crisis, with a decrease of 27.5% between 2007 and 2015, according to data from the Organization of Economic Cooperation and Development (Taxheaven, 2015).

As far as energy poverty is concerned, the research activity in Greece is limited. The issue has been studied mainly within the last years, as throughout the economic crisis the problem has rapidly increased. One of the first surveys (Santamouris et al., 2007), held in Athens in 2004 by collecting financial, energy and social data of 1110 households, showed that the average percentage of households spending more than 10% of their income for both heating and electricity was 11.3%. Since then, things have drastically changed. Along with income reduction and oil prices increase, a remarkable energy consumption decrease of 15%

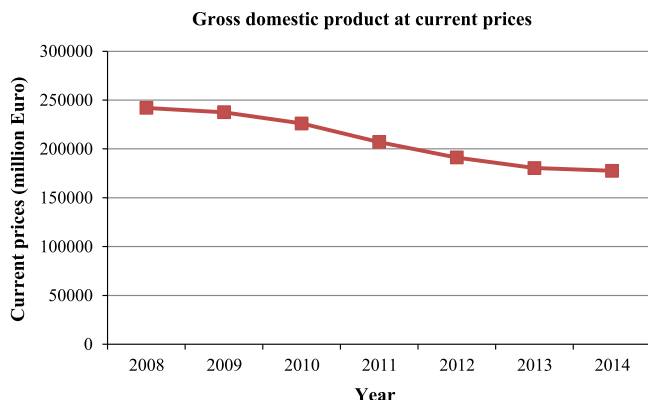


Fig. 1. Progress of GDP at current prices in Greece, 2008–2015. Source: Editing Eurostat, 2015.

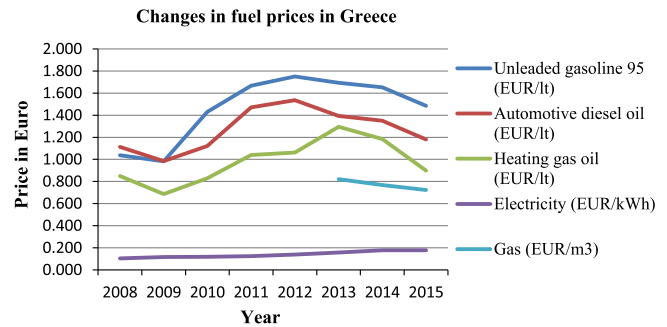


Fig. 2. Changes in fuel prices in Greece, 2008–2015. Source: Editing Eurostat, 2015 and Weekly Oil Bulletin, 2015.

occurred during the winter of 2011–2012, according to a survey on various Greek regions but mainly focused on Athens (Santamouris et al., 2013). The outcome was interpreted as shorter heating time as well as lower levels of indoor temperature, resulting in lowering the residents' quality of life.

Similar conclusions were drawn by a survey of 814 individuals in north Greece (Panas, 2012), according to which 64% of citizens stated that they face difficulties in affording space heating, 62% stated that they spend over 10% of their income for space heating and approximately 80% mentioned that they use less heat than needed in order to make ends meet. It should be noted though that an energy poverty rate (based on the 10% definition of energy expenditure) resulting by subjective views of the respondents and not by expenditure data is a controversial issue.

Moreover, during 2011–2012, it was found that Greek households present, with climate (mathematical) conversion, the greatest energy consumption in Europe – approximately 30% higher than that of Spain and almost double of Portugal's – while being also significantly higher even from countries with colder climates, such as Belgium and the Nordic countries (Panas, 2012). The main cause of this expenditure has been the long-term inactivity of the Greek state to enact laws for the buildings' thermal protection (Santamouris et al., 2013). Just in 2010 the basic regulations about the thermal protection of buildings were introduced (KENAK regulation), approaching the European standards.

According to the latest findings of a relevant survey (GSEVEE, 2014), 21.8% of the sample stated arrears in utility bills, 46.5% stated that they have reduced the already reduced expenditure for heating compared to 2013 and 75% stated weakness to manage even small further increases in heating costs and utility bills. Moreover, it was also shown (Katsoulakos, 2011; Katsoulakos and Kaliampakos, 2014) that energy poverty increases with respect to altitude and becomes a major problem in high-altitude areas, in Greece.

The existing sporadic findings give a first clue about the energy poverty conditions in Greece. However, they use partial methodological tools rather than a consistent approach to the problem and do not cover systematically the whole country. As a result, an integrated research reaching reliable results about the extent of energy poverty in Greece is still missing. Through this research, a systematic approach on the issue is attempted by conducting a primary survey on Greek households, combining subjective views about housing conditions with objective data of energy expenses, during a severe economic crisis.

## 2. Methodology and data

### 2.1. A brief overview of the methodological tools measuring energy poverty

Energy poverty is a multidimensional issue which can be approached either as an expenditure-based approach with the

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