DETERMINATION OF PUBLIC OPINION ON ENERGY POVERTY. APPLICATION IN ATHENS, GREECE

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ABSTRACT

The aim of this study is to reveal the phenomenon of energy poverty, a new form of poverty, focusing on the opinion of Athens citizens. For that, an appropriately designed questionnaire was used, covering a wide range of issues, such as living and housing conditions, housing infrastructure, heating systems, quality of life, quantitative data about energy expenses and income and social-demographic data. The questionnaire was collected during June 2020 and 332 valid questionnaires were collected. This study determines the extent of energy poverty in Athens (the metropolitan urban complex of Athens and Piraeus), analyzes its' reasons, determines the category of citizens mainly affected, and also determine the attitude of state and state organizations for this issue. The findings showed that a large proportion of Athenian households suffers from energy poverty and specific economic policies should be targeted to the energy poor families to address this issue.

KEYWORDS

Buildings; Cost; Energy; Energy Efficiency; Energy

1. INTRODUCTION

Energy poverty has emerged in recent years as one of the most significant social problems in Europe [1]. In Greece, energy poverty has involved into an increasingly problem, in recent years.

Many different definitions were used by different researchers for over two decades to describe energy poverty. These can be summarized in the difficulty or inability of a household to afford an adequate heating in its home and to have access to other basic energy services at a reasonable price [2].

Moreover, an empirical method to defining energy poverty is that of UK, according to which a household is considered fuel poor if is unable to achieve an adequate standard of warmth and it spends more than 10% of its monthly income on energy [3].

However, the impact of this phenomenon on society is not the same for all citizens, as economic, social and geographical factors make some citizens more vulnerable. Specifically, energy poverty is correlated with low household income, high energy cost and energy inefficient homes [4].

On the other hand, not having adequate housing and heating has a negative impact on a person's health (heart diseases and strokes), in particular for the most vulnerable people[5-6].

2. METHODOLOGY

In order to obtain an integrated assessment of

the energy poverty status in Athenian households (the metropolitan urban area of Athens and Piraeus), a survey was conducted through a questionnaire during June 2020.

All the necessary data were collected through an appropriately designed questionnaire. The total number of valid questionnaire is 332. The question contains 33 closed and open 33 questions, collecting data on energy behaviours of households' residents, on the existing heating system, on the energy expenditure, on the income of households and more generally on their living standards. More specifically:

- Questions 1-2 are introductory questions to introduce the respondents in the field of research.
- Questions 3-7 focus on the characteristics of the residence and investigate its type and the year of construction.
- Questions 8-11 are related to space heating of the residence and more specifically the type and quality of heating of the residence.
- Question 12 records the existence and intensity of the phenomenon of energy poverty in Athens in the recent past.
- Questions 13-17 are related to the respondent's view on energy costs and the energy behaviour of citizens.
- Finally, in the last part of the questionnaire, questions 18-26 ask the demographic and socio-economic characteristics of the respondents/households.

3. RESULTS AND DISCUSSION

3.1 Basic demographics

The main characteristics of the participants are given below. In the survey, the mean age of the participants was 47 years. The 51% of the respondents were male and 49% female; the 77% of the sample were families with 2-4 persons/household, while the 16.8% were single-person households.

The percentage of employed people was quite high: 71.2%, while the 28.8% were unemployed (or students, retired, etc).

The 9.3% of the respondents have an M.Sc. or a Ph.D., the 38.7% of the participants have a University degree, the 10.3% have a post high school degree other than University, the 29.9% of the sample has finished secondary education and the 11.8% primary.

About the 79.8% of the participants lived in apartment buildings and the 20.2% in buildings with one or two floors.

Moreover, the 32.6% of the sample had an annual income of 0-10.000€, the 34.4% had an income between 10.000-20.000€, the 18.7% between 20.000-30.000€ and the rest higher than 30.000€.

Also, the 30% of all responses were given by citizens residing in the central part of Athens, 15% in the north part, 21% in the south part, 15% in the west part and 19% in Piraeus.

According to these results, the collected sample is considered to be representative of the demographic profile of the residents living in Athens, taking account the geographical distribution of the households in the different geographical sectors of the region.

3.2 Energy poverty and household characteristics.

The mean age of the Athenian households estimated is 38 years, giving a mean date of construction at 1982.

Four out of ten citizens answered that their home has thermal insulation (Fig. 1).

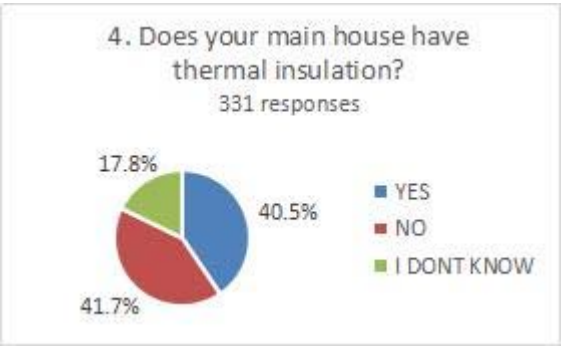

Fig.1 Thermal insulation per house

The 40% of the respondents stated that have openings with single glazing of old type and with uninsulated aluminium frames, this

percentage exceeds the 65%. It should be noticed that the basic regulations about the thermal protection of buildings were introduced only in 2010 (KENAK regulation), approaching the European standards.

Moreover, the 55.7% of Athenian households declare that have not taken any action to reduce thermal losses and the 18% answered that they want to carry out energy saving interventions, but are prevented from doing so by the cost of these interventions.

On the other hand, the 68.6% of the citizens stated that they used to waste electrical and thermal energy in their residences before the economic crisis.

3.3 Measurements of energy poverty

Using the threshold of energy poverty as the 10% of income spend on domestic energy, it is found that the 59.1% of the respondents are energy poor (Fig.2). In other words, 6 out of 10 households in Athens are unable to meet sufficiently their energy needs.

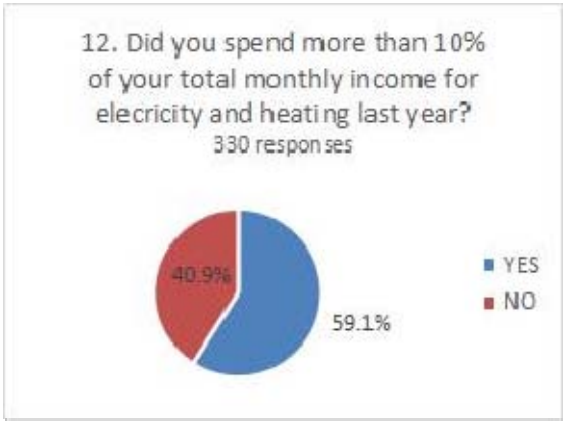

Fig.2 Monthly income for energy needs.

Therefore, 1 out of 3 citizens of Athens are forced to heat only certain parts of their residence (like bedrooms and living room), and not the whole house, to reduce their energy consumption and thus decrease their energy bills. About 1 out of 10 respondents declare that they can afford to heat their residence only 2 hours per day during the coldest days of the winter.

Another face of energy poverty is the decrease of expenses on other essentials in order to cover the energy needs. A significant proportion of the respondents (60%) reported that they 'felt forced' to decrease the expenses of other essentials to face the energy bills (Fig 3.). This is a clear impact of the economic crisis in Greece on energy poverty.

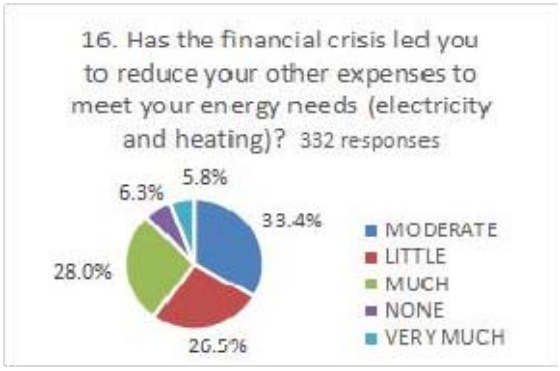

Fig.3 Restriction of other essentials needs.

3.3 Energy poverty and heating system.

Regarding the heating system of the dwellings, the 37% of the sample used autonomous heating, the 27% used the central heating system and the 34% air conditioning.

In addition, the crucial role of heating oil in energy coverage is highlighted by its dominant position as a heating fuel in Athenian households. As shown on Fig.4 a percentage of 45% of the sample is heated with oil, while the 28.4% used only electricity and the 18.1% used natural gas.

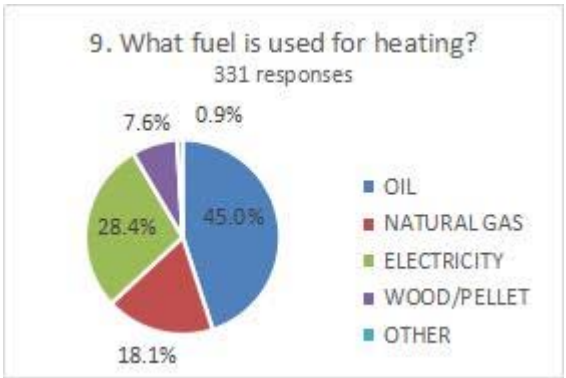

Fig.4 Type of heating fuel.

Concerning the heating oil price, the great majority of the respondents (80%) estimated that oil is very expensive, as shown on Fig.5.

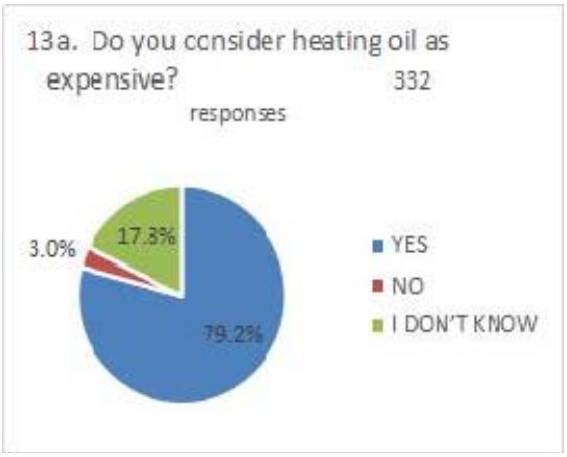

Fig.5 Cost of heating oil.

4. CONCLUSIONS

According to the results of this study, a large proportion of households (59.1%) are affected by the problem of energy poverty and should benefit from targeted policies to alleviate it.

Furthermore, special care should be paid to analyze the characteristics of these energy poor households such as buildings, heating system, energy consumption, indoor environmental quality, health problems etc.

Greek energy policy should focus more on energy upgrade of buildings through providing real incentives to households and especially low-income ones, rather than supporting them financially for a short- team period. Energy rehabilitation of those households is an essential policy in order to make those residences more energy efficient and to protect vulnerable population groups.

In that sense, retrospective thermal insulation, replacement of single glazed windows, access to district heating networks, use of solar thermal systems are some of the measures to be considered.

The other problem to be considered is the high prices of heating energy in Greece.

Energy poverty in Greece has not actually been high in the political agenda yet, despite the extreme socio-economical dimensions of the problem.

Finally, it needs to be reconsidered that the development of ambitious energy saving programs for residential buildings contributes not only to energy/fuel poverty, but also to climate change mitigation.

REFERENCES

[1] K. Csiba, A.Bajomi, A.Gosztonyi, 2016, “Energy poverty handbook” BPIE/ The Greens-EFA in the European parliament.

[2] P.J. Coulon, B. Hernández Bataller, 2013, «"Towards a coordinated European action to prevent and combat energy poverty"» Official Journal of the European Union 2013/C341/05.

[3] T. Boermans, K. Dinges, J. Grözinger, M. Schäfer, S. Förster, A. Hermelink, I. Dorband, B. von Manteuffe, 2015, “Public Consultation on the Evaluation of Directive 2010/31/EU” Final synthesis report” ECOFYS, European Comission.

[4] H.Thomson, 2014, ‘The perception and incidence of fuel poverty across the European Union’.Presented at the ‘Energy Vulnerability in Europe’ work shop hosted by the Vulneranble Consumer Working Group of the European Commission.

[5] H. Thomson, C. Snell, S. Bouzarovski, 2017, “Health, Well-Being and Energy Poverty in Europe: A Comparative Study of 32 European Countries” International Journal/ Environmental Research and Public Health.

[6] J.D. Healy, 2003, “Excess winter mortality in Europe: a cross country analysis identifying key risk factors”, Journal of epidemiology and Community health.