



## FUEL POVERTY ANALYSIS IN THREE SPANISH AUTONOMOUS REGIONS.

### SOME RETROFITTING POLICY CONSIDERATIONS

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**1. Introduction** - A person is to be regarded as living 'in fuel poverty' if he is a member of a household living on a lower income in a home which cannot be kept warm at a reasonable cost [1]. This situation is mainly triggered by three factors: low household income, lack of energy efficiency and high energy invoices.

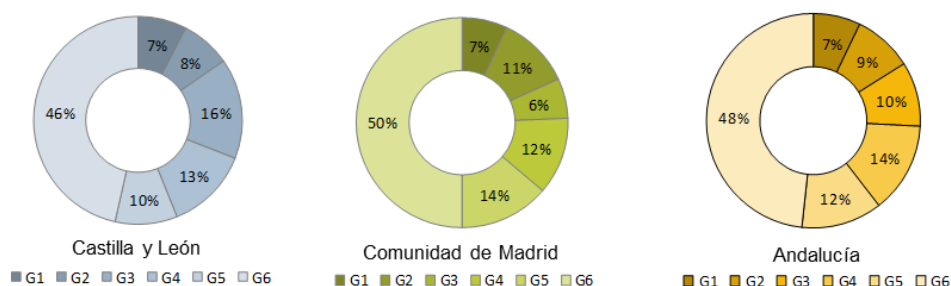
Some European countries have already made some advantages towards officially defining fuel poverty in their countries [2, 3]. Nevertheless, in Spain only some research has been done [4] and an official definition of the term is yet to come.

This research explores the relation among households' income, energy expenditure and housing stock in three autonomous regions in Spain in order to evaluate the housing stock of the fuel poor as well as to identify those households more in need. The results of the research allow establishing energy retrofitting priorities of existing housing stock as well as identifying current retrofitting policies limitations on order to tackle fuel poverty.

**2. Methods** - Three autonomous regions were selected as study cases: Castilla y León, the Autonomous Region of Madrid and Andalucía. These three regions were selected in order to consider households living in main Spanish climatic regions.

Fuel poverty incidence was established through existing statistical data: the EU-SILC survey [5] and the Spanish Family Budget Income survey [6] according to main existing methods.

Then, households were classified according to their income and energy expenditure resulting into six groups for each autonomous region, as can be seen in Figure 1. The relation between these six household groups and their housing stock was evaluated. Main housing characteristics of each group were analysed through statistical variables, as plotted in



Group	Criteria	Castilla y León	Comunidad de Madrid	Andalucía
1	Monetary and fuel poverty	77.053	164.445	215.113
2	Monetary poverty	78.655	266.085	270.035
3	Fuel poverty	158.925	144.819	296.278
4	Fuel and monetary vulnerability	131.658	280.101	415.270
5	Monetary vulnerability	98.061	326.845	367.684
6	No vulnerable	472.247	1,181.778	1,460.740

Figure 1 Household group classification according to income and expenditure

**3. Results and Discussion** - Results show an important incidence of fuel poverty. The 23% of households in Castilla y León, the 13% in the Autonomous Region of Madrid and the 17% in Andalucía spend more than the 10% of their income in energy. The division of households into six groups according to their income and energy expenditure, presented in Table 1 showed important rates of vulnerability in the three regions.

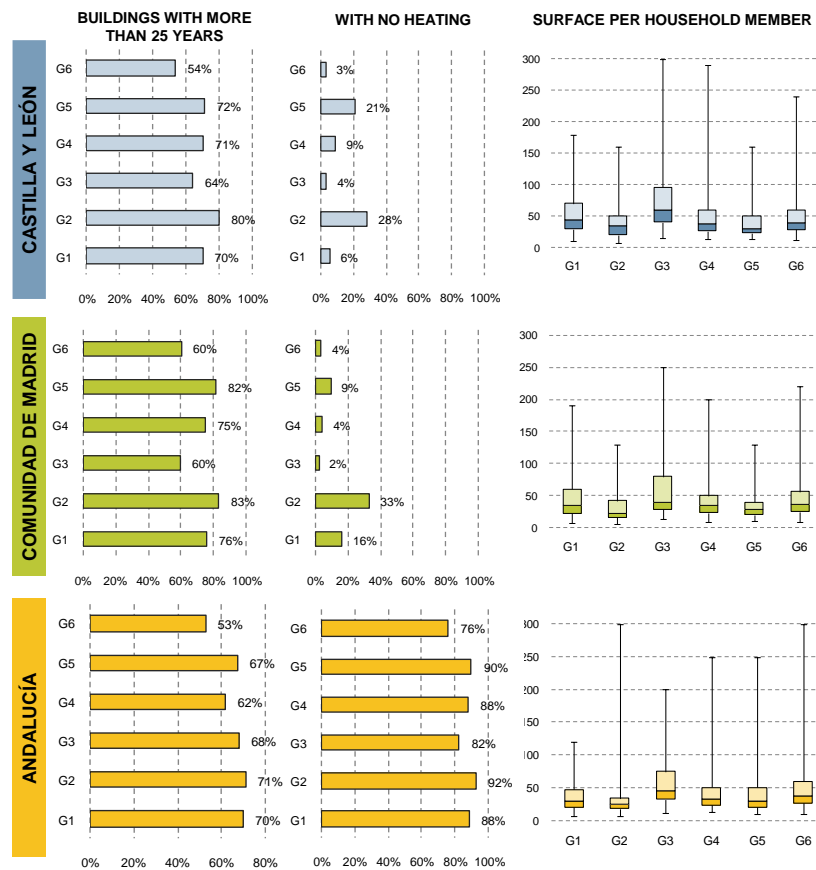


Figure 2 Characterization of the housing stock of the six household groups

At first, three were the groups considered to be the most in need (Groups 1, 2 and 3). However, the characterisation of the housing stock of the different household groups revealed information covered up in a first study of the statistics for the three regions studied.

Group 1 was confirmed as a group with high energy expenditure and very low income. Housing characterisation of Group 2 showed a low presence of heating systems and old and inefficient houses what suggests these households do not enjoy adequate temperatures at home.

By contrast, Group 3 is made up of small families living in big and relatively new houses with a good presence of heating systems. All this indicates that this group, despite having excessive energy expenditure, is not under important difficulty.

**3. Conclusions** – First conclusion of the research is the urgent need for an official definition of fuel poverty in Spain given the important incidence of it among Spanish households. Flaws in actual statistic have been identified. Finally, through the revision of current retrofitting policies, barriers to tackling fuel poverty in Spain are extracted and presented.

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