

A Social Gradient in Households Environmental Policy Responsiveness? Distributional Effects of Policy Targeting Residential Energy Use

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Energy efficiency improvements, certainly in buildings, are estimated to account for a major share of the reduction in greenhouse gas emissions needed to reach the long-term European energy and climate goals (European Commission, 2011). Private housing will thus constitute a crucial area in the development of adequate climate change mitigation policy at the national level, but the implications for its social function for households require careful investigation. Residential energy use plays the key interconnecting role, responsible for a considerable share of a country's total carbon emission while energy bills make up an important share of household disposable income. In this paper, we explore the different mechanisms behind and channels through which environmental policy targeted at the residential energy use affects households differentially across the population.

The often expressed concern is that the most-used environmental policy instruments, based on changing the relative price of environmentally-harmful consumption, are bound to have regressive effects, as the ratio of energy costs over household income increases sharply in the lower part of the income distribution. However, the final impact of a given policy measure also depends of households' responsiveness to the price or policy change. This response can vary from behavioural change, such as cutting back consumption, to an adjusted investment decision, e.g. by improving the dwelling's energy performance.

This research aims to gain insight in the extent to which households respond differently to these changes, and to which extent differential responsiveness is determined by income and socio-demographic characteristics. The empirical part of the research is carried out using Belgian data and policies. Price elasticities for the two major energy functions for households, space heating and electricity consumption, are estimated separately for different social and income groups, in order to gain insight in the differential responsiveness to changes in prices and policy across the population, both in the short term (when the capital stock is fixed) and in the medium term (when capital stock adjustments are possible). We use detailed micro-data from the Belgian part of EU-SILC, which combines information on household income, socio-demographic characteristics, dwelling characteristics as well as energy expenditure, and test different methodologies commonly used in this context. Our results are compared to the existing studies that allow elasticities to vary across population groups, for Norway (Nesbakken, 2001), Germany (Rehdanz, 2007) and Great-Britain (Meier & Rehdanz, 2010; Jamasb & Meier, 2010).

We draw upon the findings to elaborate on the effectiveness and equity of environmental policy strategies currently in place. Moreover, the conditions are explored for a policy strategy that takes account of the differentiation across the population to be more effective at achieving its targets as well as be perceived as more fair.

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