

## **VOTER'S DEDICATION FOR GREENING THE ELECTRICITY MIX**

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### **OVERVIEW**

With its commitment to double the share of renewable fuels in electricity generation to at least 30% by 2020, the German government has embarked on a potentially costly policy course. A feed-in tariff is provided to producers of green electricity, and the electricity consumer pays this subsidy by means of a levy on top of the electricity price. While this political decision triggers the market outcome in terms of an electricity mix associated with a specific levy, people must not necessarily approve this policy. The public support for this policy remains an open empirical question.

Against this backdrop, this paper aims at assessing the maximal levy that can be charged for a specific electricity mix in Germany, such that a majority of people would approve the political commitment. We analyze in the retrospective for 2008 whether the policy maker have acted on behalf of their voters; we further consider two future green electricity scenarios – which are both in line with the national target of 30% green electricity – and provide insights into the voter's preferences for reasons of political guidance.

### **METHODS AND RESULTS**

We build on data acquired by surveying about 3000 households from Germany and face every participant with five hypothetical evaluation tasks, differing in the fuel shares contributing to the electricity generation. We use highly-flexible random parameter econometric techniques in order to trace peoples' willingness-to-pay (WTP) for specific mixes of fossil, renewable, and nuclear fuels in electricity generation, and thereby capture preference heterogeneity among individuals.

Subsequently, we use individual coefficient estimates in order to calculate people's WTP for two hypothetical scenarios. Starting from Germany's electricity mix of 2008 (15% renewable, 62% fossil, and 23% nuclear), we increase in Scenario A the renewable fuel share successively to 30% at equal expense of the fossil and the nuclear share. In scenario B the rise of renewable fuels are at the only expense of nuclear fuels.

Our results suggest that a rising share of renewable fuels in the electricity generation typically increases people's WTP, while nuclear fuels are typically perceived as "bads", since people's WTP falls as the nuclear fuel share rises. However, our results also suggest substantial preference heterogeneity between individuals with respect to a specific fuel.

The following figure 1 illustrates what levy might be charged for a specific share of renewable, in accordance with the preferences of the voter's majority. The chargeable levy is in general higher in Scenario B where renewables substitute solely nuclear fuels. However, even with a share of 30% renewables, the levy does not exceed 2.37 ct/kWh.

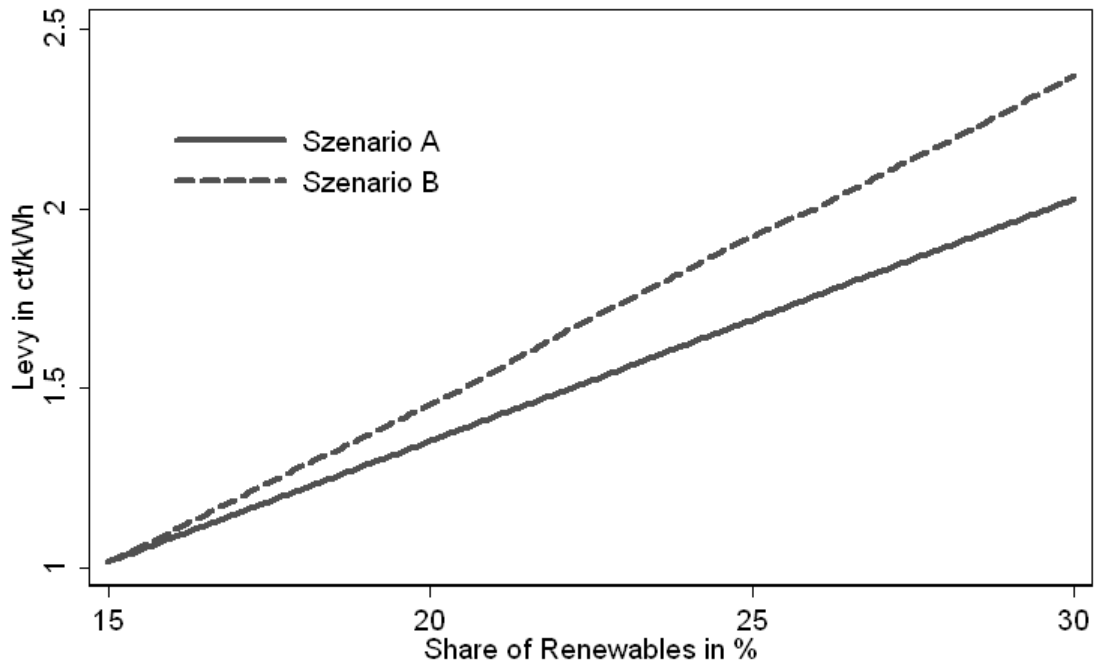


Fig. 1. Policy Support for Levy Charge

Our results are of particular interest against the backdrop of the levy actually charged in 2010. Associated with a renewable fuel share of about 18%, consumers have to pay a levy of 2.047 ct/kWh. By contrast, the levy capable for the voting majority amounts to only 1.28 ct/kWh. Obviously, Germany's costly policy course for promoting renewable energy is – already today - well beyond the scope of people's willingness to pay.

## CONCLUSION

Our results stress an actual dilemma for the energy policy: despite the fact that most people obviously dislike nuclear fuels in electricity generation, their willingness-to-pay for assisting renewable fuels is also limited. Today, Germany's feed-in tariff fosters many techniques for green electricity generation, irrespective of its price competitiveness, and already overstrains people's monetary dedication for subsidizing renewable. In order to act on their voter's preferences, policy maker must amplify their efforts in making the future promotion of green electricity less cost intensive. Notwithstanding, it might become a challenging task to find the right balance between greening the electricity mix and avoiding a surcharge of people.