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Economic incentives and policy design for energy savings

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Background

Increasing energy efficiency is commonly considered the most cost-effective way to reduce energy use and its associated greenhouse gas emissions. Therefore, it is high on the agenda of many political institutions, among those the European Commission who set a target to achieve at least 27% energy savings by 2030 compared to a business-as-usual scenario. However, the definition of strategies and incentives to realise the many benefits of energy efficiency improvements is less clear. Studies have proven the existence of the so-called energy efficiency gap, meaning that there is a difference between the potential and actual level of energy efficiency. In order to further increase energy efficiency and finally achieve the potential energy savings, new and more effective incentive schemes and policy instruments need to be considered which address the present barriers to energy efficiency.

Research questions

The primary objective of the PhD project is to define a set of incentive schemes assuring that existing energy saving potentials are realised, with a special focus on the industrial sector and households. The aim is to define appropriate incentives for both sectors based on research on the industries' and households' behaviour with respect to energy saving investments and their reaction to incentive schemes, which shall overcome potential barriers to energy efficiency. In order to achieve the project's objectives the following research questions will be addressed:

1) **What are strengths and weaknesses of existing policy instruments/instrument mixes that aim at energy efficiency and savings, looking specifically at potential policy interactions?**
2) **Based on identified barriers (and drivers) to energy efficiency in the industrial sector/on a household level, how to design new or more effective incentive schemes to increase efficiency and savings in industries/households?**
3) **What parameters have to be taken into account when considering an "optimal" policy mix for energy efficiency?**

Method

The project's main approach will be based on microeconomic theory using analytical models to analyse policy instruments and incentive schemes for energy savings. Possible policy instruments include both market-based instruments, e.g. taxes, subsidies and white certificates; command and control regulation, e.g. building regulations and minimum efficiency standards for industrial equipment and household appliances; and information schemes. In order to improve the effectiveness of policy instruments, microeconomic models of end-use energy consumption are applied which incorporate economic variables that determine industry/household behaviour towards energy efficiency and potential barriers. These should be taken into account when designing policies or policy mixes to achieve an increase in energy savings.

Expected results

Advice for policy makers on what parameters need to be considered when designing or aiming at improving policy instrument mixes for energy efficiency in order to increase energy savings in the future. Parameters that will be addressed include relevant barriers to energy efficiency, policy interactions, (investment) behaviour of energy end-users and the trade-off between renewable energy and efficiency measures.

Contact

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