

Essays on the Economics of Sustainable Energy Policies

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This dissertation seeks to contribute to the policy discussion on how to design efficient and sustainable energy policies. In three self-contained chapters, it applies microeconomic theory and empirical analysis to identify three market failures in European energy markets and to evaluate specific policy measures that strive to overcome these failures in order to increase market efficiency and to enhance environmental or societal sustainability.

Chapter 1 and 2 study European electricity markets, which play an important role in the transition towards a carbon-neutral energy future. Overcoming barriers to efficient electricity markets is a crucial step to keep the costs of this transition as low as possible to society. Both chapters focus on obstacles to electricity market efficiency that have recently been highlighted by the European Commission. On the supply side, subsidies for renewable electricity may distort production incentives and competition in wholesale electricity markets. Chapter 1 applies a theoretical model to study the effect of different subsidies on producer strategies and competition in wholesale electricity markets. On the demand side, the European Commission seeks to overcome the reluctance of residential electricity consumers to switch electricity supplier in order to ensure effective competition in the retail electricity market. Chapter 2 empirically quantifies different reasons for switching inertia using a structural discrete choice model and performs counterfactual analysis to study the effect of different policy measures that seek to overcome switching inertia.

Chapter 3 looks at the building sector, which accounts for 40% of final energy consumption in Europe and is a major emitter of carbon emissions. In the residential housing market information asymmetries hamper incentives to invest in energy efficiency improvements of rental property. This chapter empirically analyzes the effect of a European policy that mandates the use of energy performance certificates aiming at establishing an efficient market for energy efficient dwellings.