

Capacity vs Energy Subsidies for Renewables: Benefits and Costs for the 2030 EU Power Market

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Abstract: Policy makers across Europe have implemented renewable support policies with several policy objectives in mind. Among these are achieving ambitious renewable energy targets at the lowest cost and promoting technology improvement through learning-by-doing. Although subsidy mechanisms based on energy out-put are cost-effective for achieving a certain renewable energy target in the short run, policies tied to capacity installation might be more effective in reducing technology costs in the longer term. We address the question of how policies that subsidize renewable energy (feed-in premia and renewable portfolio standards (RPSs)) versus capacity (investment subsidies) impact the mix of renewable investments, electricity costs, renewable share, the amount of subsidies, and consumer prices in the EU electric power market in 2030. Our analysis is unique in its focus on the market impacts of capacity-oriented vs energy-oriented policies while considering a realistic landscape of diverse and time-varying loads and renewable resources (including existing and potential hydro, wind, and solar resources), as well as fossil-fueled generators and network constraints.

Keywords: Electricity markets, renewable policy, capacity subsidy, energy subsidy, renewable target

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