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***COST ESTIMATION OF EXISTING GERMAN RENEWABLE ENERGY INSTALLATIONS IN THE CURRENT SUPPORT MECHANISM TILL 2030***

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**Overview**

The support mechanism for renewable energies (RES) in Germany, mainly the feed-in tariff system (FIT), increased today's share of RES to about 25% of the German electricity demand. Many studies deal with calculations of costs and benefits of the installed RES installations for the society. However, quantifying these aspects is challenging, especially for the future. Different parameters, especially their future developments, influence the costs of the support mechanisms for the society.

**Methods**

In this paper, we focus on the future costs for existing installations in Germany. As subsidies are paid for 20 years after installation (plus year of installation), existing RES plants cause costs for up to 20 years in the future. We estimated costs of the existing German RES installations in the current support mechanism from 2011 to 2030 with the help of installation specific data. We calculated both net and gross costs of RES, where net costs can be defined as the residual costs for the society to finance the current RES installation after deducting revenues and avoided grid charges from the gross cost parameters. The data was mainly obtained by the four German Transmission System Operators and aggregated for the installed capacities of the end of 2011. We tested the impact of changes for different parameters like wholesale electricity prices, technology specific market values, avoided grid charges and discount rates on net costs.

**Results**

The paper shows that the aggregated residual costs of the RES-installed before the end of 2011 are about 160 bn €<sub>2013</sub> till the year 2030 in the reference scenario. A sensitivity analysis shows that both the wholesale electricity price and the discounting rate have significant impact on the development of the net costs. Varying the wholesale price as far as 35 €/MWh for the coming years in different scenarios can change aggregated net costs up to 40 bn €<sub>2013</sub> until 2030. Assuming a discount rate of 4 % instead of 2 % (reference case) decreases net costs by about 10 %. On the other hand, both variations in market values and avoided grid charges have relatively little impact.

**Conclusions**

Our calculations show the cost amount for already installed RES plants until 2030. It shows that the first expensive RES installations promoted by the German FIT bring huge future cost burdens for German electricity consumers. The often mentioned arguments for the promotion of RES, like price affordability, might work for later or future installed capacities in Germany but not for first generation installations producing within the given support mechanisms up to 2030.