

Distortions of National Policies to Renewable Energy Cooperation Mechanisms

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The EU endeavors to stimulate the use of renewable energy cooperation mechanisms. These cooperation mechanisms can significantly reduce the policy cost for meeting renewable targets. Several authors, however, have raised concerns that such cooperation mechanisms can be subject to efficiency losses due to different national regulatory conditions, and due to an ill-advised selection of cross-border support instruments. Renewable cooperation mechanisms can, for instance, bias renewable capacity towards Member States with the more favorable regulatory conditions.

In this contribution, we first develop a unifying analytical framework to show how optimal cross-border renewable energy trade should be organized and how these mechanisms could be distorted. We furthermore aim to quantitatively evaluate the importance of these distortions. To this end, we develop a partial equilibrium model, formulated as a large-scale mathematical program with equilibrium constraints, to assess the impact of (i) different national grid cost allocation regimes and (ii) different cross-border feed-in premium implementations: the fixed- and the sliding feed-in premium. The model is then applied to a case study that examines cooperation in onshore wind energy among France, Germany, the Netherlands and Belgium.

Our results indicate that one needs to pay attention when organizing cross-border auctions for renewable electricity. These should ideally not be based on sliding feed-in premiums since renewable capacity will then be biased towards high potential Member States, even if their electricity market value is low. In our case study, cross-border auctions based on the sliding feed-in premium perform even worse than no renewable cooperation at all. In addition, granting uniform subsidies to renewable installations can be sub-optimal even if the system is based on the fixed feed-in premium. Various non-harmonized national policies will decrease the efficiency of cross-border auctions if these are non-discriminatory. One should opt for an auction system that ensures the convergence of marginal support costs, instead of one that ensures the convergence of support levels.

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