COMBINING FEED-IN TARIFFS AND TENDERS TO SUPPORT SOLAR PV

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(1) Overview

This paper analyzes the optimal framework for designing tender-based feed-in tariff schemes to support solar photovoltaics (PV). Feed-in tariff (FIT) schemes are the most common policy instrument to support renewable electricity, having been implemented by 65 countries and 27 states/provinces (REN21, 2012). Flexible feed-in tariff schemes with frequent tariff adjustments are able to reach deployment targets effectively for small-scale photovoltaic systems due to their short project durations (Grau, 2012).

Auction mechanisms may be more suitable for large installations to improve control on costs to ratepayers. With regard to installation sizes, more European countries apply feed-in tariffs for small systems than for large installations across technologies, while more tendering schemes are applied for large-scale PV and biomass as well as offshore wind installations (Kitzing et al., 2012).

However, the design of these policies and the differentiation of eligible project size categories vary across countries. What is the optimal threshold level between flexible feed-in tariff schemes and auction-based mechanisms for PV remuneration?

(2) Methods

This paper develops an analytic model to simulate the deployment of solar photovoltaics based on project profitability, duration, and market uncertainty. The focus of the analysis is on PV plants because of their dynamic cost trends.

To explore the optimal threshold level between feed-in tariffs and tenders, the analytic framework developed in this paper takes into account the different advantages and challenges of these policy schemes, including their risk implications. For large-scale PV plants, flexible feed-in tariff support implies uncertainty about tariff levels at project completion time, while auction mechanisms lead to higher project development risks as not all bids will be successful.

In comparison to feed-in tariffs, tendering schemes implicate several ‘transaction costs’. These costs are diverse in nature and can include deposits for project developers, risks for the supply chain in case of infrequent tenders, costs related to quality requirements, and others.

Based on interviews with PV project developers, a remuneration status indicator has been defined with three sub-indicators: cost of capital, transaction costs, and target achievement. This indicator is used to compare remuneration effectiveness across size categories.

(3) Results and conclusions

Model results show that large photovoltaic plants, with their long development lead times and high and diverse installation and connection costs, appear to be more suitable for auction mechanisms.

The results suggest that the optimal threshold level between feed-in tariffs and tendering schemes depends on a variety of policy design criteria with regard to technology, project size, location, financing costs and risks for investors.

References

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