

Promoting energy efficiency through competitive tenders. Comparing auction schemes and end-user activation in Germany, Portugal, Switzerland and Taiwan

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1. Introduction

Governments are increasingly using competitive tenders, or in other words auctioning, in order to promote renewable energies and energy efficiency. The main rationale for governments is to lower the costs of subsidy schemes. Most prominently, auctioning is used to provide financial incentives for wind or solar energy and has more and more replaced other schemes such as feed-in tariffs. In the EU, this has been most prominently fostered by the European Commission's state aid guidelines, as auctioning is a competition-oriented approach. The competition often favors larger plants and bidders, that due to their size have lower and thus more competitive production costs and better access to capital and higher risk taking capabilities. Through this, auctioning for renewable energy is mainly driven and used by larger energy utilities and, at least in some cases as Leiren and Reimer [1] argue, might

even save traditional energy utilities from insolvency. In contrast to renewables, auctioning is not so often used for promoting and supporting energy efficiency measures [2]. This paper explores how competitive tenders are currently used to incentivize end-user energy efficiency in Germany, Portugal, Switzerland and Taiwan. It also analyzes what target groups are most likely to respond to competitive tenders and what approaches may help to mitigate the over-representation of large enterprises and to stimulate the participation of small and medium enterprises and households.

2. Background and Methodology

Auctioning is a process of buying and selling goods and services, where an auctioneer launches an open call for bids and chooses the buyer or seller that submitted the best bid. The economist literature on auctions states that auctions in general are a very efficient market-oriented procedure, even if auctions are repeated over time. However, auction processes imposes significant upfront cost for the applicant and therefore cost effectiveness can only be achieved for larger volumes. Following auction literature (among others: [2], [3] and [4]), the design of the auction should be carefully chosen in order to reflect possible effects on expected revenues and entry costs. The most important elements of the auction design can be derived from this literature and be used in order to compare the existing energy efficiency auctions. In addition, some elements specific to energy efficiency will be added.

- The auctioned good: e.g. kWh energy savings or avoided CO₂ emissions. As for kWh, in particular should the proof of these savings are delivered or not (e.g. through measurement). It's also possible that there is more than one attribute to define the price ("single" vs. "multiple" attributes).
- The focus could be on electricity savings (Switzerland and Portugal) and / or fuel savings (Germany).
- Scope of sellers: Which groups or individual actors do governments (as the "buyer" of energy efficiency) target as potential seller of energy efficiency?
- Properties of auctioned good: Are there multiple units auctioned at the same time or only one unit at a time? Is a uniform price paid for all multiple units or a discriminatory price (i.e. a different price for each unit)? What are the criteria of the buyer of the savings to accept a bid?
- Price development: How is the bidding process organised? Is the seller entitled to offer one bid only (single shot) or can he change the offer in an auction round over time after a feedback? Are the bids of the sellers visible to other sellers or not (thus, "blind" or "sealed")?
- Setting a price range: Does the buyer accept bids regardless of the costs ("no reserve

auction”) or does he impose a limit (“reserve auction”)? Is there a “buyout option”, a minimal price to which sellers always get their bid accepted?

- Winner selection: What is the criteria of the buyer to accept bids (e.g. up to the funds at disposal)?

3. Results and Findings

The experiences from the different case studies will be further explored and presented at the conference. The main features of the tendering schemes are described, among others, in different papers and presentations, such as for Germany [6], Portugal [7], Switzerland [8] and Taiwan [9].

4. Discussions and Conclusions

Energy efficiency auctions in different countries prove to deliver energy savings at low cost. The tendering scheme can be repeated over time and remain a competition-oriented approach. The tendering schemes in all four places are multi-units, first-price sealed-bid auctions. The seller receives the price he offered (discriminatory price). All cases use a reserve auction with a fixed and published maximal price. The winner selection goes by funds at disposal. Most places don't use a buyout option, but it is also notable that such a “walking pass” or “flat rate” is use in one place (Taiwan).The auctioned good can be kWh electricity savings only (Switzerland) or in some instances also a number of different criteria (Portugal, Taiwan). The energy savings are mostly calculated (Switzerland), obtained by a mixture of measurements and calculations (Germany, Portugal) or are explicitly designed to be measured through energy management systems (Taiwan).

Among the end-users that participate in competitive tenders, large enterprises are over-represented. In one case, the auction is explicitly designed to cover large-scale measures of companies only (Germany). Small and medium enterprises are to some degree better covered if project bundles (Switzerland) or soft measures like information and education (Portugal) are included. In order to promote measures in households, a separate tender with an inferior cost-effectiveness was realized (Switzerland). It is also possible to focus on specific groups like Energy Service Companies (ESCO) as in Taiwan. Overall, there is a wide scope in tendering for incentivising energy efficiency measures. However, it is necessary to take specific precautionary measures if competitive tenders should not primarily aim at efficiency measures in larger enterprises.

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