THE EVOLUTION TOWARD MARKET MECHANISMS SUCH AS AUCTIONS IN THE EUROPEAN UNION UNDER THE NEW RES DIRECTIVE

Fiscal Reforms for Low Carbon Growth in the Mediterranean

The World Bank
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RES support auctions - case of PV

RES projects compete for support payments by participating in an auction procedure.


Latest PPAs in Germany in April 2018: <40 €/MWh

Source: Renewable Energy Auctions 2016, IRENA
* Source: Fraunhofer ISE
RES support auctions - case of wind onshore


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What are (RES) auctions?

• Price-finding & allocation mechanism
• To be combined with a support instrument:
Motivation to use auctions

- In feed-in systems: Determination of tariffs based on administrative tariff setting (based on LCOE and political negotiation processes)
- Involves risk of excessive or insufficient support, if real costs are not well-known
- Increase of cost-effectiveness requires competitive price formation
- Auctions / tender offer an option to introduce elements of competitive price formation
- Volume control: tender /auctions used to allocate financing to different technologies
- Use of auctions in electricity sector common, their use for RES-support has increased considerably in recent years
- In practice, combining auctions/tender with FIT/FIP is typical
Challenges of using tender/auctions

• Ensuring realistic bids
  • Risk of underbidding (lack of information or strategic behaviour)
  • High prices due to collusive behaviour

• Ensuring high implementation rates and timely implementation of projects by physical / financial pre-qualifications and penalties
  • Risk of reduced effectiveness due to non-realisation
  • Penalties and pre-qualifications required to ensure high implementation rate
  • Winning projects are often delayed or not implemented (e.g. former NFFO UK, Brazil)

• Ensuring continuity of support
  • Possibility of stop and go cycles

• Limiting risks for bidders
  • High risks for bidders lead to low number of participants and/or high risk premiums
Auctions and state aid guidelines in the EU

From 1 January 2017, the following requirements apply: Aid is granted in a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria (66), unless:

- Member States demonstrate that only one or a very limited number of projects or sites could be eligible; or
- Member States demonstrate that a competitive bidding process would lead to higher support levels (for example to avoid strategic bidding); or
- Member States demonstrate that a competitive bidding process would result in low project realisation rates (avoid underbidding).
The bidding process can be limited to specific technologies where a process open to all generators would lead to a suboptimal result which cannot be addressed in the process design in view of, in particular:

- the longer-term potential of a given new and innovative technology; or
- the need to achieve diversification; or
- network constraints and grid stability; or
- system (integration) costs; or
- the need to avoid distortions on the raw material markets from biomass support (67).

Aid may be granted without a competitive bidding process as described in paragraph (126) to installations with an installed electricity capacity of less than 1 MW, or demonstration projects, except for electricity from wind energy, for installations with an installed electricity capacity of up to 6 MW or 6 generation units.
Assessing auction performance

Criterion

Socio-political acceptability

Effectiveness

Allocative efficiency

Indicators

Support cost minimization

Awarding favoured projects (small actors, certain locations, etc.)

Participating amounts (MW)

Realization rate

Number of participating low-cost projects

Awarding lowest-cost projects
General principles

Ensure **sufficient competition**!

- Supply > demand
- If unsure, reduce auction volume / set a ceiling price

Ensure **fairness** and avoid **unfavourable incentives**:

- Bids are binding/realisation commitment
- Lowest bid wins
- Winning bidders never get less support than they asked for in their bid
A typical RES auction

- Procurement auction
- „Best“ bid is typically the lowest required support level

<table>
<thead>
<tr>
<th>Single-item, tech-specific auction</th>
<th>Multiple-item, tech-specific auction</th>
<th>Multiple-item, tech-neutral auction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction for a 400 MW offshore wind project at a pre-determined site in Denmark</td>
<td>Auction for a total volume of 150 MW PV, with up to 10 MW projects, in Germany</td>
<td>Auction for a maximum budget of 3.5 billion EUR in the Netherlands</td>
</tr>
</tbody>
</table>
**Auction design elements**

### Selection criteria
- Price-only

Secondary objectives
- Geographical diversity
- Actor diversity
- Technical specifications
- Domestic industry development
- Grid integration

### Scope
- Auction volume
- Periodicity (number and frequency of rounds)
- Target achievement safeguards (dealing with amounts not awarded/built)

### Price limits
- Price ceilings
- Minimum prices

### Payment
- Remuneration type (FIT, FIP, inv. grant)
- Duration of contract
- Updating of remuneration over time

### Auction format
- Single-item
- Multi-item

### Auction type
- Static (sealed bid)
- Dynamic (clock auctions)
- Hybrid designs

### Pricing rule
- First-price vs. second-price
- English vs. Dutch
- Pay-as-bid vs. uniform pricing
- Ascending vs. descending clock

### Prequalification criteria
- Technical requirements
- Documentation requirements
- Preliminary licences
- Deposits and other guarantees

### Bidder restrictions
- Financial capability requirements
- Experience

### Penalties
- Non-compliance
- Delays

### Other
- Deadlines
- Grace periods
# Auction formats

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<th>Multiple-item</th>
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<td><strong>Windpark of 100 MW at specified site</strong></td>
<td><strong>600 MW of wind</strong></td>
</tr>
<tr>
<td>- One bidder is awarded</td>
<td>- Bidders awarded until capacity is full</td>
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Mostly used if:
- Large projects compared to total auction volume
- Pipeline contains few, large projects
- Infrastructure is developed simultaneously

Mostly used if:
- Small projects compared to total auction volume
- Pipeline contains many, small projects
- Infrastructure already exists
Auction types

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Static

- sealed bid
- One bid per project

• Simple
• Good for small/less experienced bidders
• no chance to observe other bidders
• lower risk of implicit collusion

Dynamic

- Several bidding rounds
- Bidders adjust their offer

• complex
• bidders observe each other
• higher risk of implicit collusion
Pricing rules

**Static**
- 'sealed bid’
- One bid per project

**Single-item**
- Windpark of 100 MW at specified site
- One bidder is awarded

**Multiple-item**
- 600 MW of wind
- Bidders awarded until capacity is full

**Dynamic**
- Several bidding rounds
- Bidders adjust their offer

First-price Auction
Second-price Auction
Pricing rules

Single-item, static auctions:

First-price auction

Second-price auction
**Pricing rules**

**Static**
- One bidder is awarded

- First-price Auction
- Second-price Auction

- Pay-as-bid
- Uniform pricing HAB
- Uniform pricing LRB

**Single-item**
- Windpark of 100 MW at specified site
- One bidder is awarded

**Multiple-item**
- 600 MW of wind
- Bidders awarded until capacity is full

**Dynamic**
- Several bidding rounds
- Bidders adjust their offer

- English Auction
- Dutch Auction

- Ascending clock auction
- Descending clock auction
Pricing rules

Pay-as-bid pricing

Uniform pricing LRB

Uniform pricing HAB

prices awarded bidders

price for all awarded bidders

awarded volume

awarded volume

€/MWh

MW

€/MWh

MW
Material Prequalifications

Why?
To ensure that...
• Bids are serious
• Bidders know their project well

Examples:
• detailed project description
• grid access guarantee
• land tenure
• environmental permits
• construction permits
Financial Prequalifications

Why?
To ensure that...
• Bids are serious
• Bidders have financial competence

Examples:
• Bid bond
• Financial pre-payment

Usually combined with a penalty
One- or two-stepped
Commonly defined in terms of €/kW
AURES

AURES is a European research project on auctions for renewable energy support (RES) in the EU. The general objective of the project is to promote an effective use and efficient implementation of auctions to improve the performance of electricity from renewable energy sources in Europe. See a structured overview of all our publications here.

PUBLICATION OVERVIEW >>

AUCTION TOOLS

1. The "About Auctions" overview and glossary
2. The cash flow model simulating single investment appraisals
3. The policy memos
4. The AURES Auction Designer
5. The AURES Auction Academy webinars

TOOLBOX >>

NEWS

New renewable energy auctions in Denmark
8. December 2017  |  News

Auctions for renewable energy support - Taming the beast of competitive bidding
22. December 2017  |  Reports

PUBLICATIONS

TWITTER

AURES project
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THANK‘S FOR LISTENING