Moving from Auction Design 1.0 (least cost RE) to Auction Design 2.0 (balancing various policy objectives)

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- 40+ countries work experience (consulting and presentations)
# Moving from Auction Design 1.0 to Auction Design 2.0

<table>
<thead>
<tr>
<th>Auction Design 1.0</th>
<th>Auction Design 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective:</strong></td>
<td><strong>Objective:</strong></td>
</tr>
<tr>
<td>Assure least cost</td>
<td>Balancing various</td>
</tr>
<tr>
<td>procurement of RE</td>
<td>policy objectives</td>
</tr>
</tbody>
</table>

![Graph showing trend of USD/MWh over years with Solar and Wind prices](image1)

![Diagram with icons for System integration, Location, Local content, Socio-economic + ownership](image2)

- Least cost RE

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[Image: 556x459 to 700x519]
[Image: 51x78 to 360x234]
[Image: 396x68 to 699x241]

Auction Design 1.0:
Recent Low-cost Auction Results
Recent Breakthrough Auction Results

- March 2016, **Mexico**: 1,853MW auctioned at USD 3.2 c/kWh (15 yr agreement)
- August 2016, **Chile**: 12,430GWh were auctioned at USD 2.91 c/kWh (20 yrs)
- March 2017, **UAE**: 350MW were auctioned at USD 2.42 c/kWh
- October 2017, **Saudi Arabia**: 300 MW were auctioned for USD 1.79 c/kWh (!) (25 yrs)
"Recent" Auction Results

Vija Pakalkaite (ICIS): RES auctions designs and results: comparison across the EU

Auction Design 1.0:

How to achieve low-cost RE procurement?
The enabling environment pyramid

Price discovery mechanism:
- FITs/Auctions

Contractual Factors:
- Payment duration, Off-taker, currency risk, inflation risk, exposure to market price etc.

Regulatory Factors:
- Stable regulatory environment, permitting, land access, streamlined administrative procedures, and grid access and connection

Market Factors:
- Level of competition, size of targeted RE market, cost of capital, size of individual projects, economics of scale, etc.

Resource and Technology Factors:
- Cost decline of RE components, a jurisdiction's resource quality, etc.

Source: Jacobs, Couture and Appleman (2018)
## Market factors

<table>
<thead>
<tr>
<th>Market factors</th>
<th>Regulatory factors</th>
<th>Contractual factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market size</td>
<td>• Stable regulatory</td>
<td>• Solvent and reliable off-taker</td>
</tr>
<tr>
<td>• Project size</td>
<td>environment</td>
<td>• Contract duration</td>
</tr>
<tr>
<td>• Cost of capital</td>
<td>• Streamlined permitting and administrative procedures</td>
<td>• Fixed prices (payment per kWh)</td>
</tr>
<tr>
<td>• Presence of a qualified workforce</td>
<td>• Land access</td>
<td>• Inflation indexation</td>
</tr>
<tr>
<td>• Presence of key supporting infrastructure</td>
<td>• Grid interconnection procedures</td>
<td>• Currency risk mitigation</td>
</tr>
<tr>
<td></td>
<td>• Other factors</td>
<td>• Dispatch and curtailment rules</td>
</tr>
</tbody>
</table>
Auctions in low-income countries

• The World’s bank Scaling Solar project offers a “one-stop-shop” for streamlining Solar PV projects, enabling several successful competitive bidding rounds in Sub-Saharan Africa.

  – **Zambia 1**: While nearly 80% of the population does not have access to electricity, a first tender was awarded in 2016, bringing 47.5MW solar energy for a ground-breaking 6.015 cents/kWh tariff, fixed for 25 years.

  – **Zambia 2**: Another 500MW production capacity has been agreed on, of which 180MW will be awarded in an initial procurement round.

  – **Senegal**: In April 2018, two utility-scale solar plants with a total capacity of 60MW were awarded for just under 4 Euro cents/kWh (3.80 and 3.98 respectively), thus providing the cheapest electricity source in the entire country.

Auctions Design 1.0:

Basic Design for Least Cost Procurement
Key questions when designing auctions of RE

1. What is being auctioned, how much, and when? (Procurement schedule)
2. What payment will winners receive? (Payment modalities)
3. What mechanisms is used for price determination? (Price-finding mechanism)
4. How can I ensure that projects will actually get built? (Penalties for none-compliance)
5. Who can participate in auctions? (Pre-qualifications)
6. On what basis are bids evaluated? (Selection criteria)
Interesting Aspects of Auction Design 1.0:

• Competition vs. project realization:
  – Pre-qualification requirements: How to balance material and financial pre-qualifications?
  – Which elements should be defined as pre-qualification and which as part of selection criteria?
  – How to deal with low levels of competition?


• Winning bids and eligibility:
  – How can PPAs help project developers to win bids

Dominik Huebler (NERA): PPA als "Joker" bei der Teilnahme an EE-Ausschreibungen
Solar Auctions 2.0:

Balancing Low Cost with Other Policy
Objectives
Balancing various Policy Objectives

Policy objectives 1.0

Policy objectives 2.0

System integration
Location
Local content
Socio-economic + ownership

Least cost RE
Balancing various Policy Objectives: Socio-economics

Policy objectives 1.0

Least cost RE

Policy objectives 2.0

Socio-economics and ownership
Several economic development scoring categories (30% non-price):

- **Job creation**: specifically for SA citizens, black citizens, and local communities
- **Local content**: measured by the % of construction costs spent on South African goods and services
- **Ownership**: shareholding by black citizens and local communities in various stages of the supply chain
- **Management Control**: top management positions held by black citizens
Balancing various Policy Objectives

Policy objectives 1.0

Least cost RE

Policy objectives 2.0

System integration

Bernhard Strohmayer (BEE): Innovationsausschreibungen im EEG
Balancing various Policy Objectives

Policy objectives 1.0
- Least cost RE

Policy objectives 2.0
- Locational steering

Silvana Tiedemann & Ana Amazo (Navigant): Wenn das Ergebnis nicht passt: Standortsteuerung in Ausschreibungen
Balancing various Policy Objectives: Local Content

Vasilios Anatolitis (Fraunhofer ISI): Empirical insights on local content requirements from RE auctions in India.
Contact Details

Thanks for your attention! … and cooperation !!!

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