AURES II – Auctions for Renewable Energy Support II

Final conference

Virtual meeting, 28 April 2022
Lessons learnt from European auctions

László Szabó – REKK
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<td>Case studies and quantitative analysis</td>
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Case studies on auctions for the support of renewable energy

Alfa Diallo – REKK
Occurrence and the lowest annual average auction price for PV capacities in the EU, 2016 and 2020 (2019 €/MWh)

Auctioned capacity: **1.90 GW** (2016) vs **8.80 GW** (2020)
Occurrence and the lowest annual average auction price for onshore wind capacities in the EU, 2016 and 2020 (2019 €/MWh)

Auctioned capacity: **1.63 GW** (2016) vs **5.68 GW** (2020)

*Source: Aures II auction database. Remarks: (f) fixed premium auctions, * auction prices corresponding to the previous year. Light yellow and blue colours indicate countries where multi-technology auctions were organised for the corresponding technology, but no capacity has been awarded.*
Main insights from the case studies

**Similarities in design**
- pay-as-bid, static, multi-unit auctions
- support period 15-20 years
- price is the main factor of winner selection
- promoting actor diversity
  - small plants
  - local communities

**Differences in design**
- setting auction volume
- technology focus
- support payments
  - mostly two-sided sliding (CfD),
  - one-sided sliding (Germany)
  - fixed (Denmark)
- level of guarantees
  - less stringent material & higher level of financial
  - strict material and lower financial
  - both requirements are strict.

**Effectiveness and efficiency**
- substantial price decrease compared to former FIT, price trend differs according to market maturity (~dynamic efficiency)
- generally adequate level of competition
  - some exemptions (wind in Germany, biomass in Poland, almost all auctions in Italy) - price trend varies accordingly
- limited information on past auctions
  - difficult to assess effectiveness with respect to project realisation
New insights and new directions

New insights

• Large number of projects ‘in the pipeline’ and situations of ‘last chance to go’ can spur competition and result in low prices
• Lack of suitable sites for further deployment raise policy issues
• Conflicts might arise between poor design and auction performance and longer-term predictability of regulation
• The requirement of technology neutrality is understood differently by member states

New directions

• Broader scope of auctions – SDE++ in the Netherlands, innovation auctions in Germany
• Consideration of grid connection issues – using auctions to allocate scarce network connection points in Portugal
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AURES II has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817619
European experience with RES auctions

Jose Elias Cabrera – European Commission, DG ENER
Auction design and policy objectives

Ann-Katrin Fleck – Takon GmbH
Vasilios Anatolitis – Fraunhofer ISI
Achieving the objectives of renewable energy policy – Insights from renewable energy auction design in Europe

Ann-Katrin Fleck – Takon GmbH
Vasilios Anatolitis – Fraunhofer ISI
Most prominent objective of countries regarding renewable energy transition is the target to achieve at least a certain percentage of renewable energies.

Many countries have more policy objectives, e.g., green growth.

Those objectives can be conflicting!

→ Prioritisation is necessary (Howlett 2009, Matsuo & Schmidt 2019)

Contribution of our study

- We want to provide guidance for countries to design consistent strategies and tailor-made auctions based on their objectives.

Research Questions:

- In what way do certain policy objectives lead to a choice of design elements?
- Are the strategies and auction designs aligned or can they be improved?
Identification of RES policy objectives based on national laws

• We collected the policy objectives stated in respective RES laws of all EU member states (+ UK) having auctions in place: Effectiveness, System cost efficiency, Support cost efficiency, Green growth, Security of supply, and Actor diversity

• We derived theoretically their relation

• We checked the countries’ stated policy objectives for consistency
Implementation of Auction Design Elements – Check on Consistency

- We derived the effects of various design elements on the objectives
- What design elements did countries choose? Are those consistent with their stated objectives?

→ Auctions are not a panacea: prioritisation of objectives before designing an auction!

→ 9 out of 20 countries chose consistent objectives, while 13 out of 20 countries designed their auctions according to their objectives

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How to design efficient renewable energy auctions?
Empirical insights from Europe

Vasilios Anatolitis – Fraunhofer ISI
Alina Azanbayev – Goethe University Frankfurt
Ann-Katrin Fleck – Takon GmbH
Motivation

• Auctions are the predominant support instrument for (large-scale) renewable energy sources (RES) in Europe and worldwide

• Policymakers strive among other policy objectives for (static) efficiency, i.e., low awarded prices, and effectiveness, i.e., high realisation rates, in RES auctions

• Increasing amount of literature on design and performance of RES auctions, but:
  • theoretic or qualitative analyses,
  • case studies, or
  • quantitative/econometric, but focused on effectiveness

• Contribution of our study
  • Quantitative analysis of drivers of RES auction prices using the AURES II auction database

• Research question
  • Which design elements lead to efficient RES auction outcomes?
Data and Methodology

• Main input:
  • AURES II database
  • RE shares from Eurostat

• Over 200 auctions from 16 European countries in the years from 2012 to 2020

• Unbalanced dataset with repeated values

• Panel-Data analysis with country- and time-fixed effects
  • Country-fixed effects capture time-invariant effects on country-level
  • Time-fixed effects capture effects over time in all countries
If **support cost efficiency**, i.e., **low awarded prices**, is the only objective in auctions, policymakers should:

- avoid restricting auctions to **small-scale projects under 1 MW**
- implement a **ceiling price**
- not implement **multi-technology** auctions limited to small-scale projects. In contrast, in auctions open to large-scale projects, they could decrease the awarded prices.
- favour **PV** if auctions are restricted to **small-scale** projects. In auctions open to **large-scale** projects, **onshore wind** seems to perform better than PV.
- avoid **quotas**
- carefully coordinate the **realisation period** with the introduction of **financial prequalification** requirements: policymakers should either strive for **short realisation periods with financial prequalifications** or for **long realisation periods with no financial prequalifications** in place.
- avoid **multi-criteria auctions**
- Based on our data and analysis, we find no convincing evidence for **flexibility** for bidders to have a significant impact on the prices. Furthermore, our results suggest that the effect on awarded prices is not significantly different between a **FIP and a CfD**.
AURES II has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817619

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International experience with RES auctions

Diala Hawila – IRENA
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