

AURES II – Auctions for Renewable Energy Support II

Final conference

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Auction design and policy objectives

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Achieving the objectives of renewable energy policy – Insights from renewable energy auction design in Europe

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Motivation

- 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

	Effectiveness	System cost efficiency	Support cost efficiency	Green growth	Security of supply	Actor diversity
HR	✓	✗	✗	✓	✓	✗
DK	✓	✗	✓	✗	✓	✗
EE	✗	✗	✓	✗	✓	✗
FI	✓	✗	✗	✗	✗	✗
FR	✓	✗	✓	✓	✓	✗
DE	✓	✓	✓	✗	✗	✓
EL	✓	✗	✓	✓	✓	✗
HU	✓	✗	✓	✓	✓	✗
IE	✓	✗	✓	✗	✓	✓
IT1	✓	✓	✓	✗	✗	✗
IT2	✓	✓	✓	✗	✗	✗
IT3	✓	✓	✓	✗	✗	✗
LT	✓	✗	✗	✗	✓	✗
LU	✓	✓	✗	✗	✓	✗
MT	✓	✗	✗	✗	✗	✗
NL	✓	✗	✗	✗	✗	✗
PL	✗	✗	✓	✗	✓	✗
PT	✓	✓	✓	✗	✓	✗
SK	✓	✗	✗	✗	✗	✗
SI	✓	✓	✗	✗	✓	✗
ES1	✓	✓	✓	✗	✓	✗
ES2	✓	✓	✗	✗	✓	✓
UK	✓	✗	✓	✗	✓	✗

Table 1: Overview of identified objectives in the analysed countries

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

	HR	DK	EE	FI	FR	DE	EL	HU	IE	IT1	IT2	IT3	LT	LU	MT	NL	PL	PT	SK	SI	ES1	ES2	UK
Aligned objectives	✓	X	X	✓	X	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓	X	X	X
Auction design performance	✓	✓	✓	✓	✓	X	✓	✓	X	X	X	X	X	✓	✓	X	✓	✓	✓	X	✓	X	X

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

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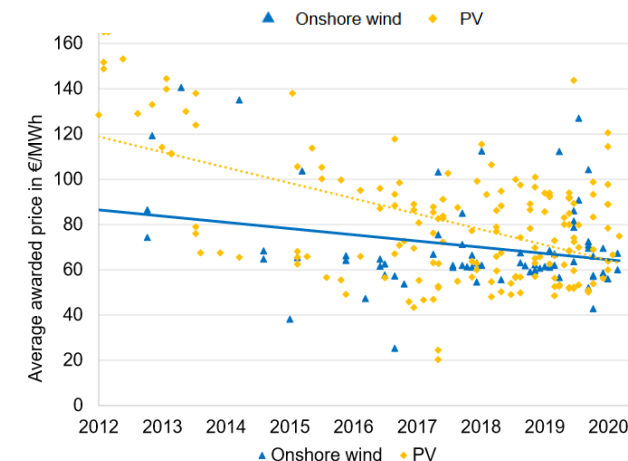
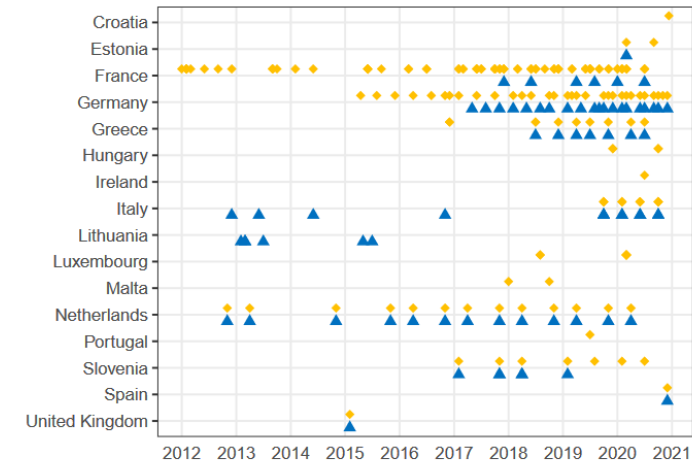
Motivation



- 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



Results

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



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