

AURES II – Auctions for Renewable Energy Support II

Final conference

Virtual meeting, 28 April 2022

Lessons learnt from European auctions

László Szabó – REKK



Agenda

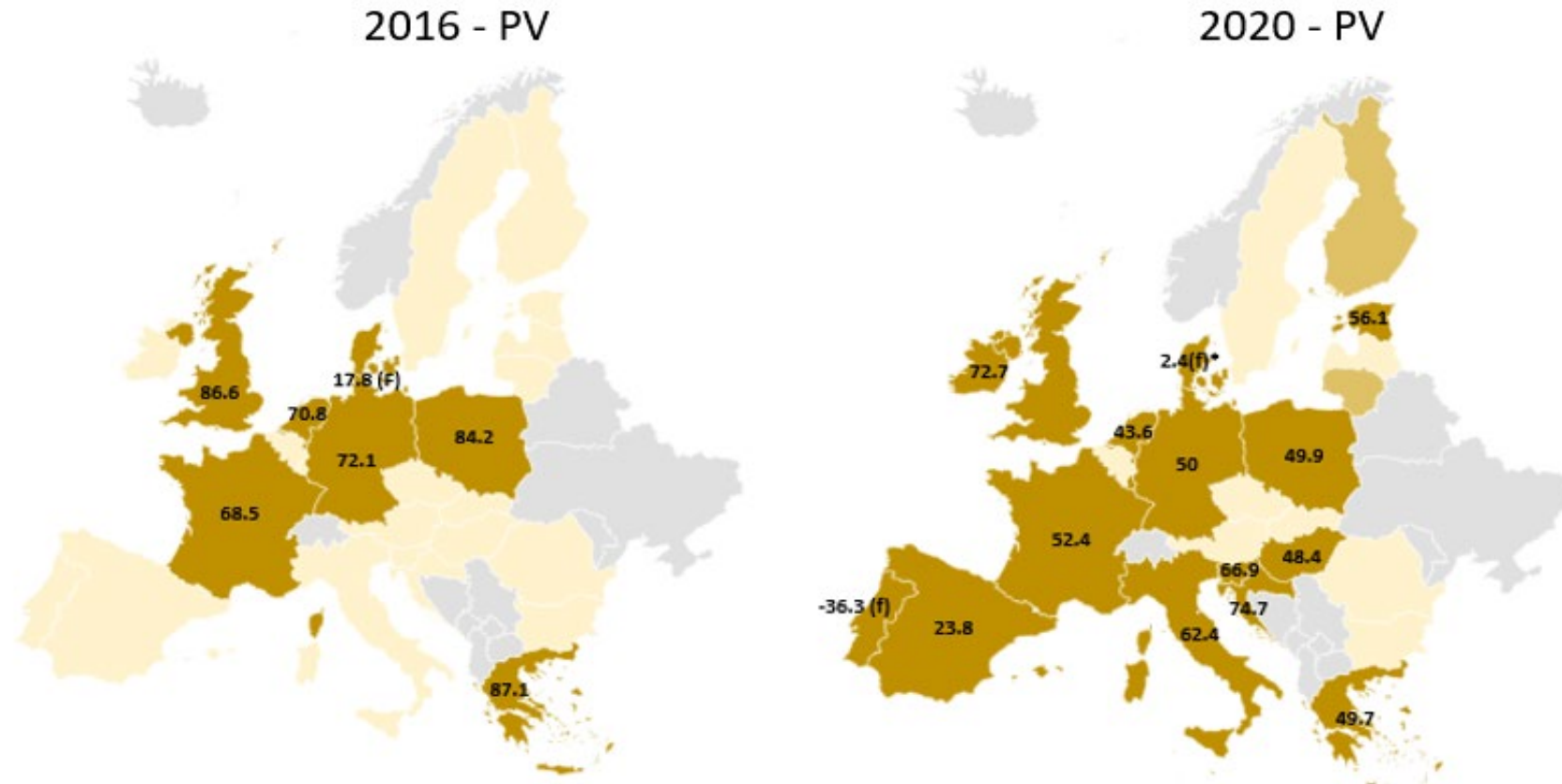
Time in CET	Topic	Speaker
13:00-14:00	Lessons learnt from European auctions	László Szabó (REKK)
13:05-13:15	Case studies and quantitative analysis	Alfa Diallo (REKK)
13:15-13:20	European experience with RES auctions	Jose Elias Cabrera (European Commission, DG ENER)
13:20-13:30	Auction design and policy objectives	Ann-Katrin Fleck (Takon)
13:30-13:35	International experience with RES auctions	Diala Hawila (IRENA)
13:35-14:00	Q&A and panel discussion	Moderator: László Szabó (REKK), Panelists: Alfa Diallo (REKK), Ann-Katrin Fleck (Takon), Vasilios Anatolitis (Fraunhofer ISI), Diala Hawila (IRENA), Jose Elias Cabrera (European Commission, DG ENER)

Case studies on auctions for the support of renewable energy

Alfa Diallo – REKK

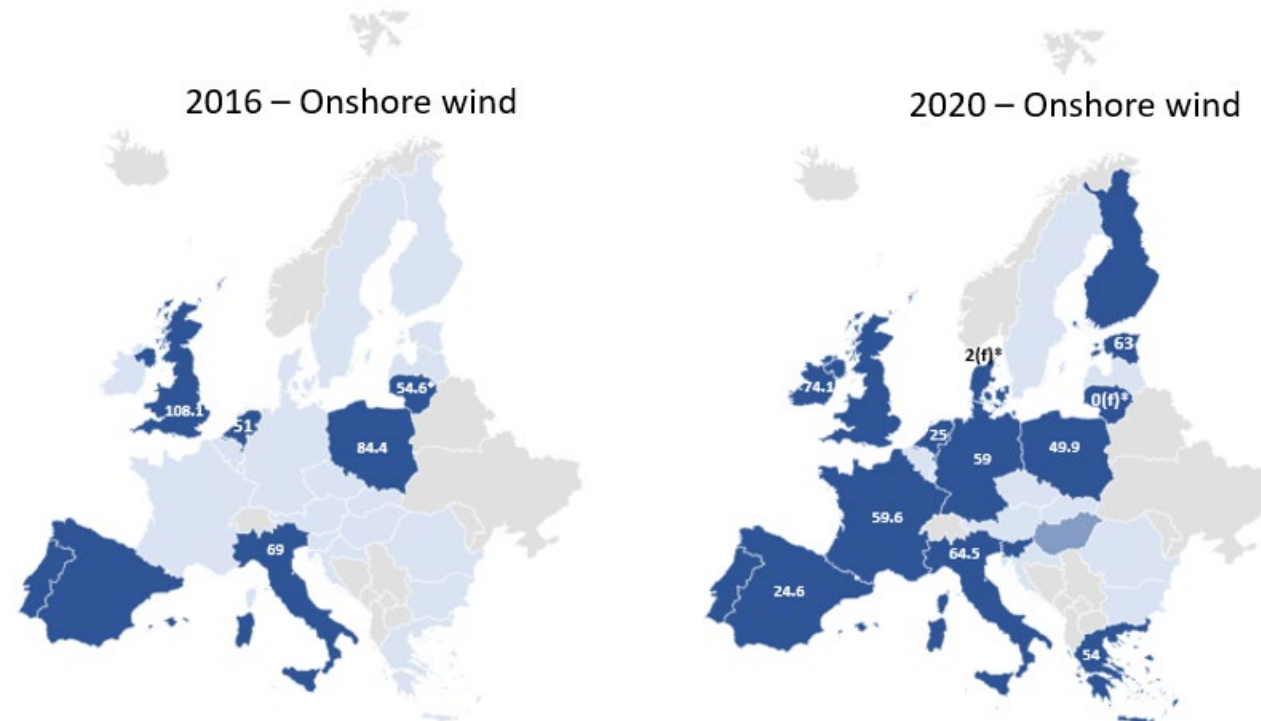


Occurrence and the lowest annual average auction price for PV capacities in the EU, 2016 and 2020 (2019 €/MWh)



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



Alfa Diallo

REKK

alfa.diallo@rekk.hu

AURES II

Website: <http://aures2project.eu/>

LinkedIn: AURES II

Twitter: @auctions4res

Newsletter: <http://eepurl.com/gd42zz>



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

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

Vasilios Anatolitis – Fraunhofer ISI

Alina Azanbayev – Goethe University Frankfurt

Ann-Katrin Fleck – Takon GmbH



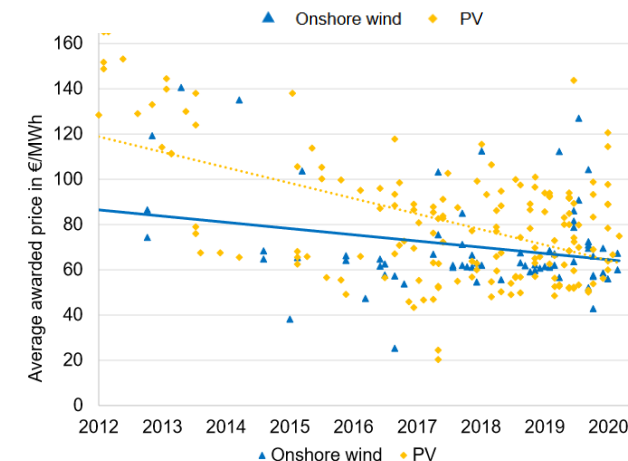
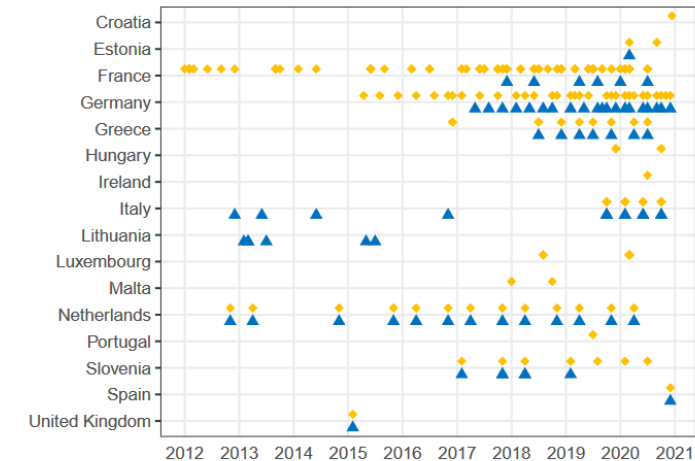
Motivation



- 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



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



Ann-Katrin Fleck

Takon GmbH

fleck@takon.de

Karlsruhe Institute of Technology

ann-katrin.fleck@kit.edu



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International experience with RES auctions

Diala Hawila – IRENA



Q&A and panel discussion

Lessons learnt from European auctions

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