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gefördert

# CASE STUDY ANALYSIS

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# Project team



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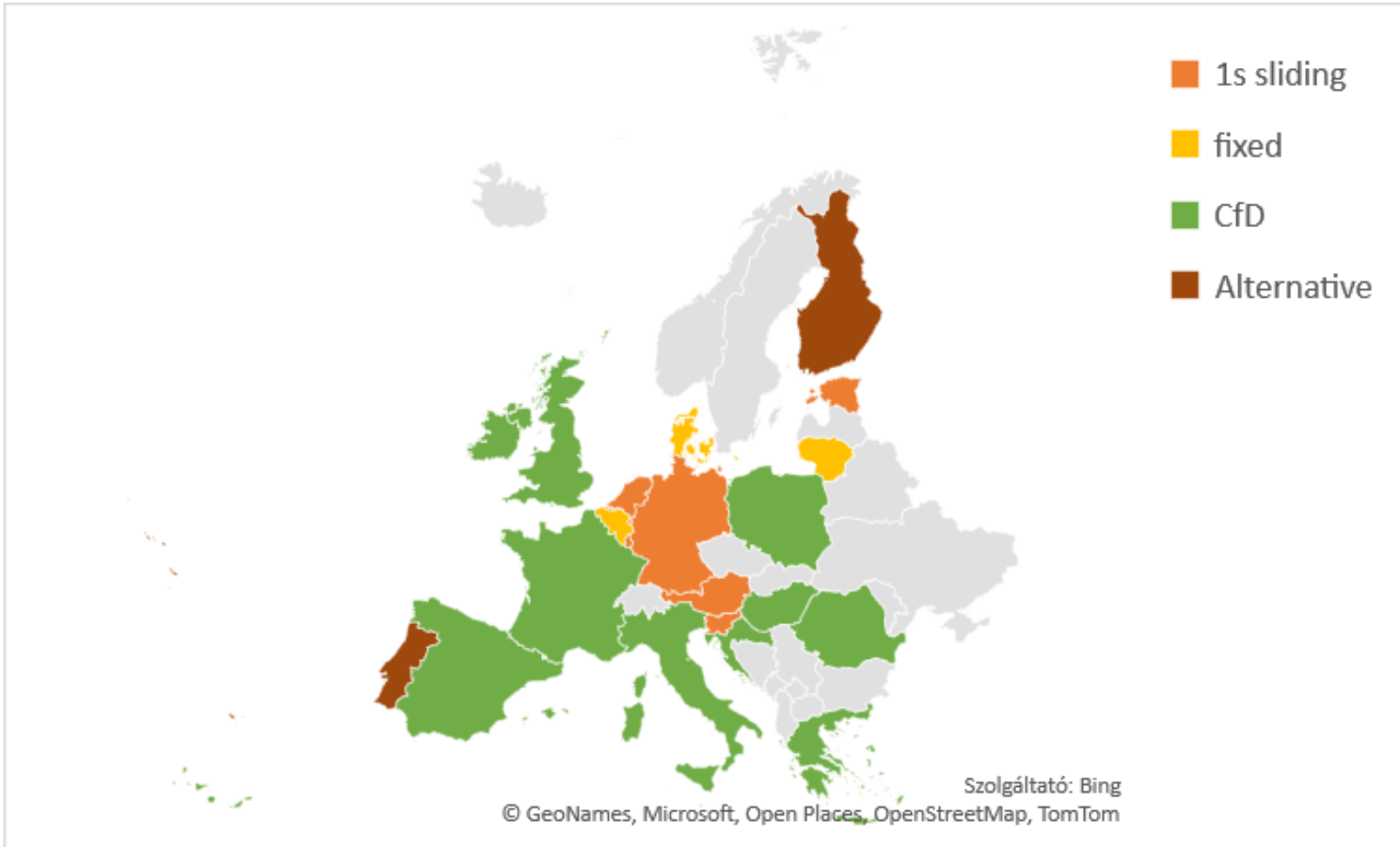
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- [AURES II](#) (2019-2022)
  - Project leader of WP2 (Case studies)
  - Contributor of WP5 (cross-border auctions) and WP8 (Modelling)
- [Evaluation of European auctions for DG Energy](#) (2021-2022)
  - In consortium with MRC
- Recommendations for implementing auctions in Armenia (2022-2023)
- [Recommendations for implementing and enhancing auctions for Energy Community contracting parties](#) (2023-2024)

# Scope of the analysis

- The comparative report focuses on 3 main topics
  - Details of the **CfD design**
  - The relation of **PPAs and auction**
  - How, different design incentives RES producers to **follow market signals** as much a possible
- High level analysis of 8 countries
- France, Greece, Hungary, Ireland, Italy, Poland, Spain, United Kingdom
- More detailed case studies
  - Hungary
  - Spain
  - United Kingdom
- The [report](#) is publicly available

# CfD in Europe



- Currently the **dominant scheme in the EU is CfD**, however many countries apply different remuneration
  - This will potentially change because of the EMD reform (mandatory CfD)
- Some countries apply different schemes for some technologies (e.g. offshore wind), while others are not evident to categorise (e.g. Austria)
- The future of auctions is unsure there are some countries planning to cease support for mature technologies (Denmark, Greece, Netherlands)

# High level overview of auction of the 8 countries

	Eligible technologies	Technology specificity	Size-based division within the auction	Auctioned product	Average number of auction rounds per year
<b>France</b>	PV, wind, bioenergy, hydro	Technology specific	Yes	Capacity	4
<b>Greece</b>	PV, onshore wind	Multi-technology	Yes	Capacity	N/A
<b>Hungary</b>	All RES technologies	Multi-technology	Yes	Energy & Budget	1
<b>Ireland</b>	All RES technologies	Multi-technology	No	Energy	1
<b>Italy</b>	PV, onshore wind, hydro, sewage treatment gas	Technology basket	Yes	Capacity	3
<b>Poland</b>	All RES technologies	Technology basket	Yes	Energy & Budget	1
<b>Spain</b>	PV, onshore wind, bioenergy, hydro	Hybrid	No	Capacity	2
<b>United Kingdom</b>	All RES technologies	Technology basket	No	Budget	0.5

# Reference price, CfD

	Reference technology for reference price calculation	Reference period
<b>France</b>	Technology specific for intermittent generation	Monthly
<b>Greece</b>	Technology specific for intermittent generation	Monthly
<b>Hungary</b>	Technology specific for intermittent generation	Monthly
<b>Ireland</b>	Not relevant	Hourly for intermittent, yearly for dispatchable RES
<b>Italy</b>	Not relevant	Hourly
<b>Poland</b>	Technology specific for intermittent generation	Monthly
<b>Spain</b>	Not relevant	Hourly
<b>United Kingdom</b>	Not relevant	Hourly for intermittent, half-yearly for dispatchable

# Additional elements, CfD

	Strike price adjustment	Possibility for delayed CfD payment
<b>France</b>	Bonus payment for solar if there are at least 15 hours with a price of 0 EUR/MWh in the year and PV did not produce in these hours.	Temporarily, in 2022, 18 month of market operation was allowed before entering the scheme.
<b>Greece</b>	No price modification	Until 03/2023, 24 months of market operation was allowed before entering the scheme.
<b>Hungary</b>	Indexation with inflation -1% point	Indefinite time of market operation is allowed before entering the CfD scheme, but once entered, it is not possible to leave.
<b>Ireland</b>	Evaluation Correction Factor can be used to favour certain technologies, they are determined on a round-by-round basis	No information about the possibility to delay entry
<b>Italy</b>	No adjustment	18 month of market operation is allowed before entering the scheme.
<b>Poland</b>	Adjusted with inflation	No possibility to delay entry into the scheme
<b>Spain</b>	Payment received is the weighted average of the bid price and the market price, weight of market price is higher for dispatchable producers	No possibility to delay entry into the scheme
<b>United Kingdom</b>	Adjusted with inflation	No information about the possibility to delay entry

# PPA and Auctions

Special regulation for PPAs and auctions	
<b>France</b>	Projects are not eligible for GOs if they participate in the governmental scheme and sign a PPA in parallel.
<b>Greece</b>	PPA projects have a preferential treatment in the interconnection queue.
<b>Hungary</b>	PPA projects (except for onsite PPAs with no feed-in to the grid) must pay 40%-point higher income tax than projects participating in the governmental auction schemes.
<b>Ireland</b>	No special regulation
<b>Italy</b>	No special regulation
<b>Poland</b>	Projects participating in auctions cannot sell through PPAs.
<b>Spain</b>	Projects participating in auctions cannot sell through PPAs, they can only sell on the wholesale market if they are able to start production before the realization deadline.
<b>United Kingdom</b>	Projects participating in governmental auctions can only sign utility PPAs, but not corporate PPAs



# Summary of the findings of the case studies - I

- Hungary
  - In practice a technology specific auction for PV
  - Successful tendering rounds, with **competitive prices**
  - **Market integration** of RES is facilitated through **monthly reference periods**
  - Tendering discontinued because **grid capacity shortage**
  - Very **long delays** are allowed for projects to complete the PP
  - Some producer treat governmental scheme as an option
  - **Realisation rate is very low**
  - **Very unfavourable conditions for PPAs** (extra tax)

# Summary of the findings of the case studies - II

- United Kingdom
  - Unique **pay as clear auction** for different **technology baskets**
  - Successful earlier rounds however **possibility of under subscription** in recent and upcoming rounds
  - Not frequent tendering (2 years historically changed to 1 year)
  - **Separate treatment for dispatchable and non-dispatchable technologies via reference period** (hourly vs half-yearly)
  - **Moderate coexistence of auction and PPA** (only utility PPA is allowed for supported project)
  - **Very mild penalties**, resulting in serious delays and moderate non-realisation of the projects

# Summary of the findings of the case studies - III

- Spain
  - Auctions for mainly PV and wind in practice
  - Early rounds were very successful resulting **in record low prices**
  - In later rounds **serious undersubscription problems**
  - Scheme is currently discontinued because of **lack interest from investors**
  - Incentivization of **market integration is unique, through adjusting the bid price** (weighted average of bid price and the market value)
  - Governmental tenders are **very restrictive for PPAs**
  - **PPA and governmental tender seems to be more like competitors** than complements, with the former being more popular

# Conclusions

- CFD provide **stable revenues** for investors and **avoid oversubsidisation** of RES projects through the payback obligation.
- CfD **does not really incentivize the market integration of renewables** (neither intermittent nor dispatchable generators), because the scheme mainly provides stable revenues.
- The **payback obligation** (in case of high prices) can create a situation where more beneficial solutions are available to producers, usually PPAs, which **can create competition for the governmental scheme** or, in extreme cases, can empty the governmental tenders.
  - **Too restrictive regulation** for PPA and auction can strengthen this effect.
- **CfDs may carry a higher risk of non-completion** of projects if the market environment changes significantly between the time of the auction and the completion of the power plant. Thus, it is advised to **operate CfDs with not very long realisation periods**.
- To enhance market integration the most common measure is to implement **longer reference periods**
  - Differences present whether only for dispatchable or intermittent technology as well
  - This measure by itself does not provide enough incentive for example to install storages