

ECOFYS



sustainable energy for everyone

Auctions for RES support in Europe

**Interim results of the AURES project
Presentation at the Energy Community**

10/11/2016

Fabian Wigand

Agenda

- > The AURES project
- > Auction principles and int. experiences with RES auctions
- > Key auction design principles
- > Best practices in auction design
- > Continue the conversation

AURES

AUctions for Renewable Energy Support

- A coordination and support action under EU Horizon2020 (coordinator: DTU)
- Three-year project: Jan 2015 to Dec 2017
- Background: New EC State Aid Guidelines: "competitive elements" in RES support
- Two main objectives
 1. New insights regarding auction design and identification of 'best practices'
 2. Knowledge building and facilitation of cooperation amongst policy makers, market participants and other stakeholders
- Examples of questions to be answered
 - Which auction types and designs are specifically suitable for RES-E support?
 - What effects (desired or undesired) do different design options have under different market conditions?



Project activities at a glance

Finalised:

- Identification of auction types and formats suitable for RES support
- Description of appropriate design elements for RES support
- Empirical analysis of past and ongoing auction implementations
- Cash-flow type model for individual investors

Ongoing:

- Case cooperation with policy makers on auction implementations
- Analysis on alternatives to auctions
- Game theoretic, agent-based model for simulation of auctions in energy systems
- Online policy support tool for best practice auction design

Starting / Upcoming:

- Auction experiments in the lab

Continuous:

- Dissemination and stakeholder contact in webinars, workshops, media actions
- Next stakeholder workshop: early 2017 in Brussels

Find out more at www.aresproject.eu

AURES Reports on past and ongoing auctions

- Download all reports at www.aresproject.eu
- Learn about past auctions in Germany, California, Denmark, Italy, China, Brazil, Ireland, Netherlands, Portugal, South Africa, UK, France
- Learn about ongoing / future auction implementations in Poland, Croatia, Slovakia, Spain, and a case on cross-border auctions Denmark / Netherlands

AURES AUCTION ACADEMY

- Watch the recordings of our 8-session webinar series at www.aresproject.eu
- Learn about how to design RES auctions: practical and empirical aspects; lessons from other industries; how to participate in an auction; how to ensure actor diversity, and more...

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Auction fundamentals: Auctions can ensure efficient allocation of support payments, if there is sufficient competition

When is an auction competitive?

- Supply from the market exceeds auction volume
- Eligible bids exceed auction volume
- Sufficient number of actors in the market

→ Auctions need to be tailored to market environment



Auction fundamentals: What are general opportunities and challenges of RES auctions?

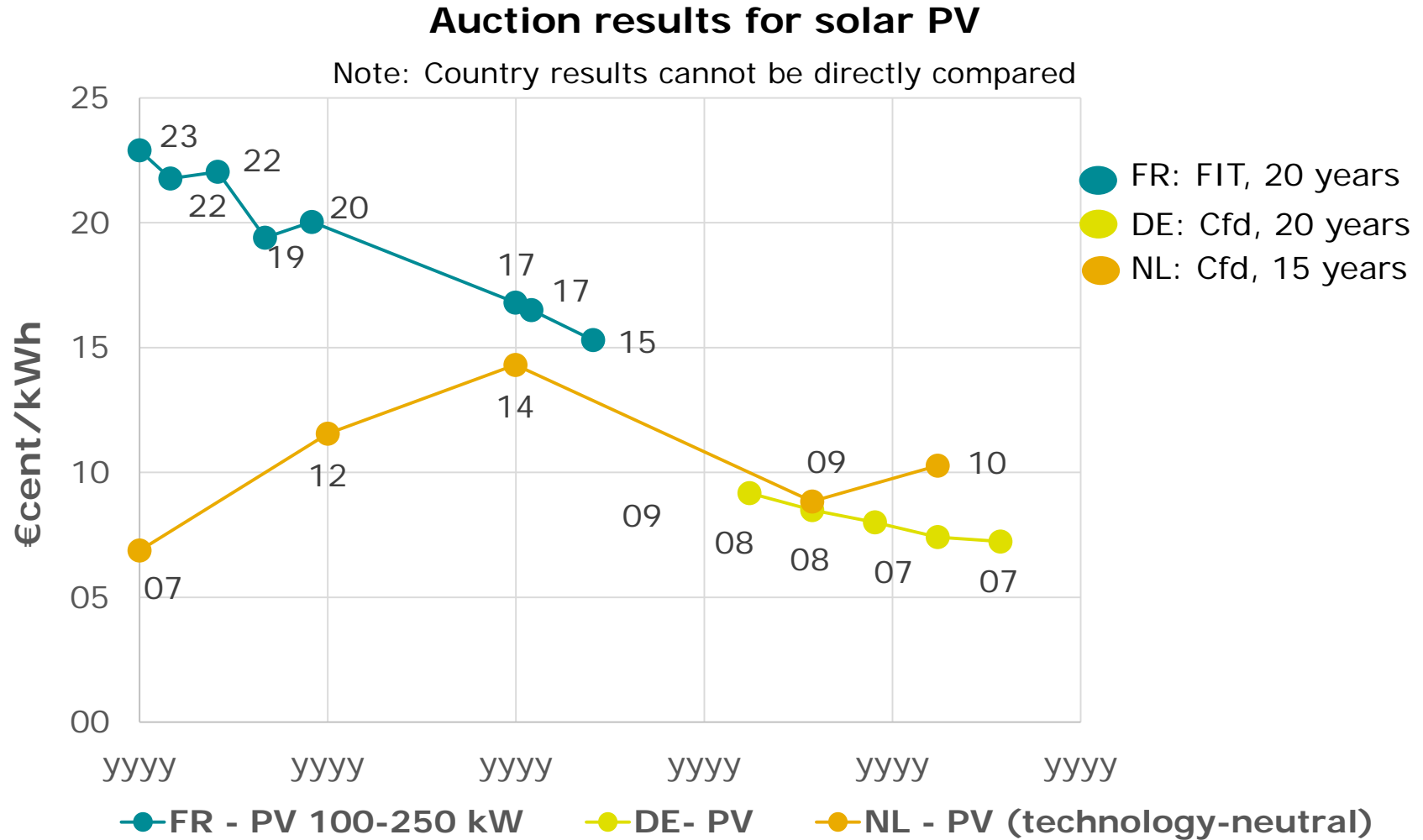
Opportunities

- > Control of maximum volume and support cost
- > Support level is determined by the market, not the administration (market exposure and information generation)
- > Competition between RES-E producers may lower prices compared to FIT/FIP
- > Real-cost discovery

Challenges

- > Challenge of ensuring high realisation rates/target fulfilment
- > Higher risk for RES-E producers than FIT/FIP, challenging particularly for smaller actors (risk of market concentration)
- > Underbidding, uncertainty over project cost and unexperienced bidders lead to "winner's curse"
- > Risk of strategic behaviour (collusion) leading to higher prices and support costs

International experience with RES auctions: Prices have decreased in most countries analysed



Source: Ecofys based on AURES case studies, BNetzA and Staatscourant

International experience with RES auctions: Project realisation rates are mixed and not always satisfactory

Country	Realisation rate	Source
FR	Below 50% for wind, PV and biomass by 2014	Assemblée Nationale (2014)
NL	70-80% realization rates for wind onshore, 30% geothermal (awarded since 2012)	AURES (2016)
UK	Instances of underbidding for solar, contracts not signed	AURES (2016)
IT	50% of first round (2012) realised on time, 25% delayed (realization ongoing) by 2015	Negri (2015), stakeholder interviews

In many countries too early to tell (realisation period has not ended)

Negative auction outcomes can be explained by market conditions and auction design flaws

Low supply (other examples: IT)



Off-shore wind auction, Anholt (2009/10)

- > High delay penalties + strict schedule + opportunities abroad → only one bid submitted → high prices

Low levels of eligibility



Solar PV, 100-250 kW (2012)

- > Unclear pre-qualification requirements + inexperienced bidders → only 60% of bids eligible

Risk of low realisation



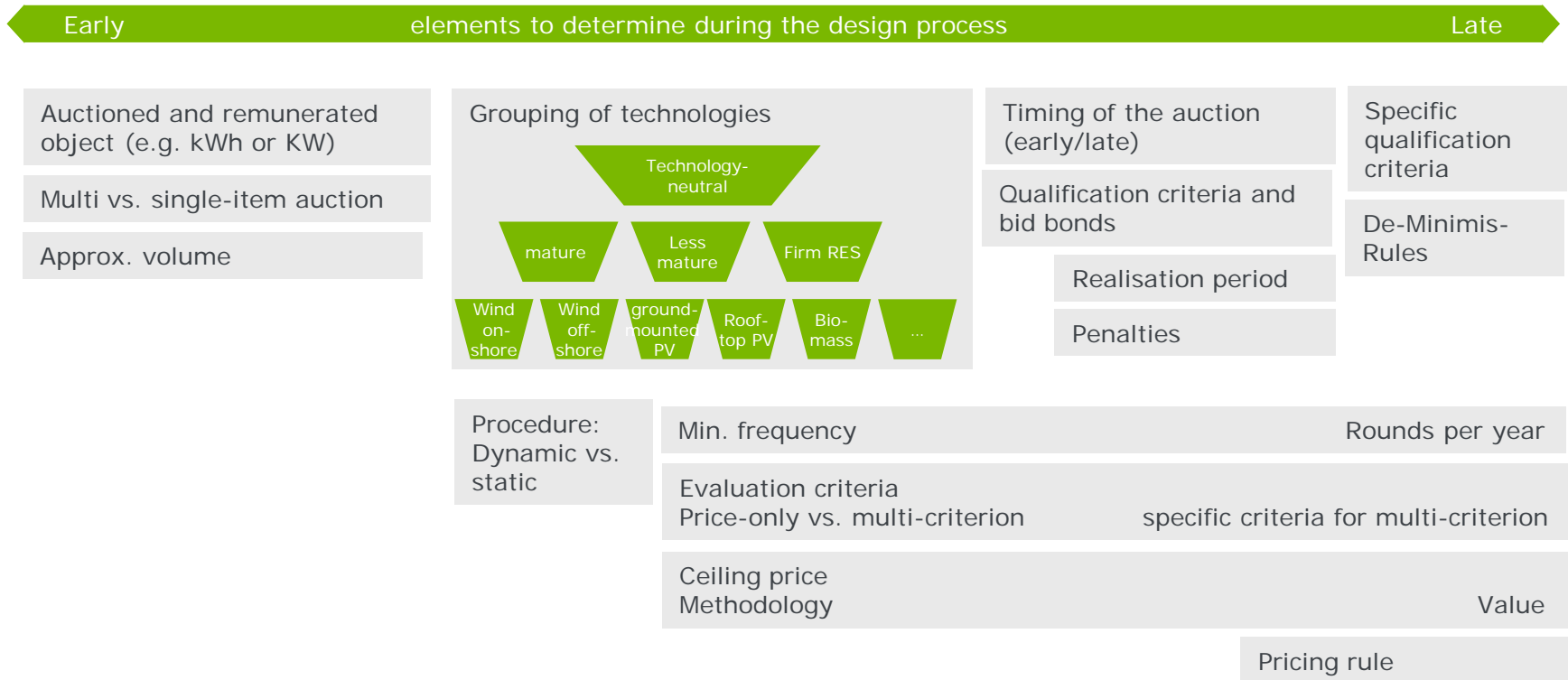
Onshore wind and biomass (2016)

- > Only one round (uncertainty over schedule) + low prequalification + 10 GW in the pipeline + uniform pricing → zero support levels → risk of non-realisation

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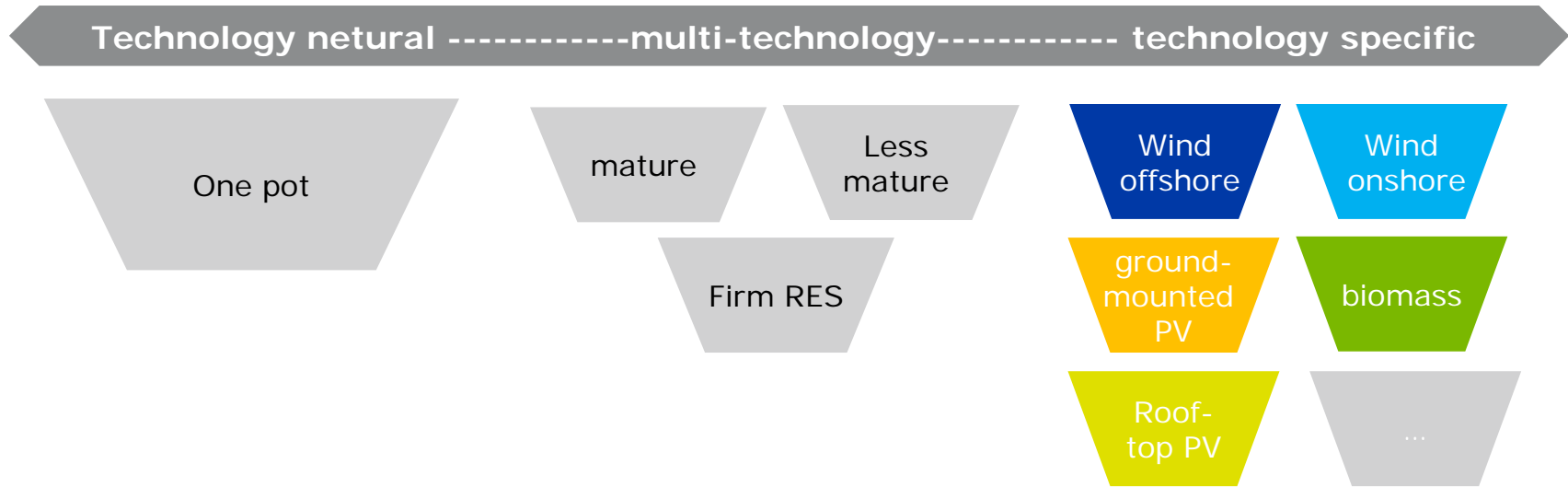
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Steps of auction design



> This slide does *not* show which elements have the highest impact on the auction's outcome, i.e. its effectiveness and efficiency.

Countries rather introduce technology-specific or multi-technology than technology-neutral auctions.



FR	UK	NL	IT	DE
Technology specific with sub-categories	Multi-technology	one pot with technology specific elements	Technology specific	Technology specific

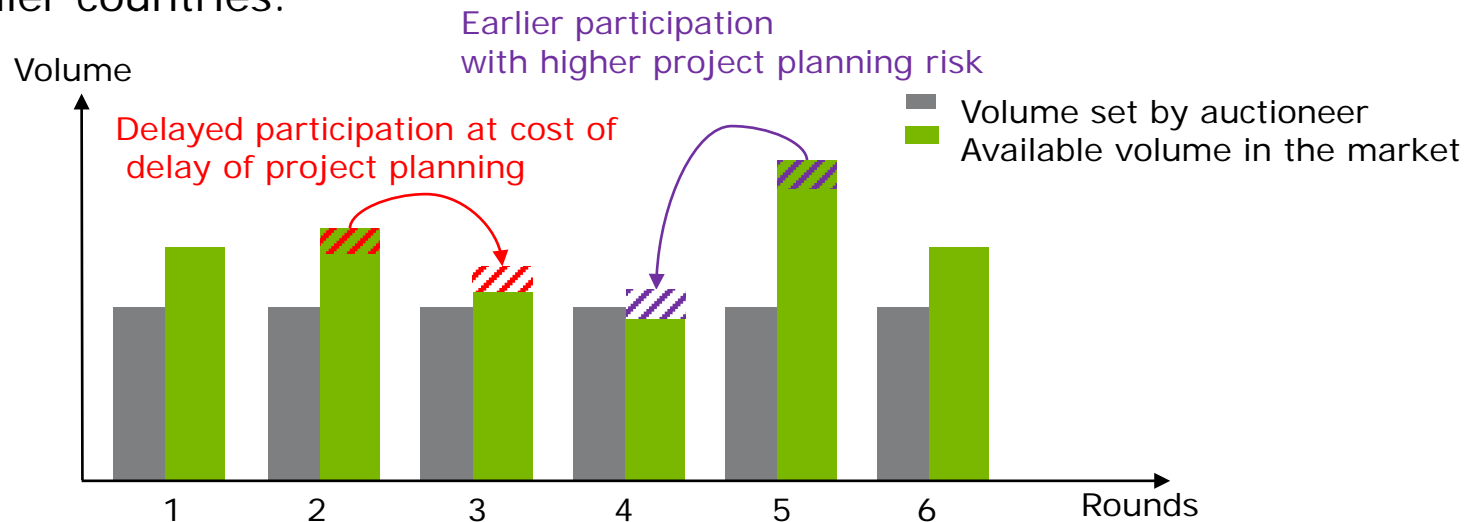
Design: When to choose technology-neutral or technology-specific auctions?

Whether advantages or disadvantages of technology neutrality prevail depends on

- Technology costs
 - Technology maturity
 - Market potential
 - Differences in system integration costs
 - Policy goals
- In technology neutrality auctions, include technology specific design elements if necessary (e.g. quota, boni, differentiated requirements and ceiling prices)

Design: A reliable auction schedule is key

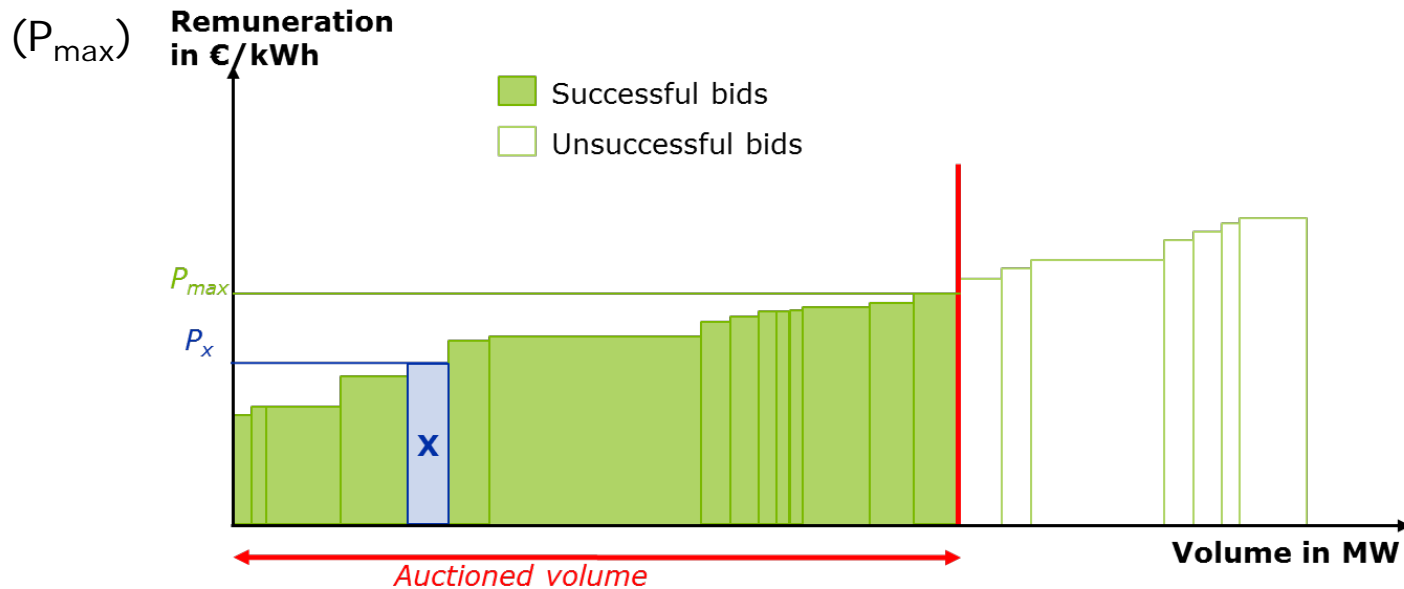
- > Bidders should know the auctioned volume beforehand.
- > Delayed and earlier participation are not unwanted, as the level of competition may equalise.
- > Aligning auction schedule with neighbouring countries may be an option for smaller countries.



	FR	UK	NL	IT	DE
Rounds per year	Multiple (3+)	1 so far (2 nd on hold)	2 procedure with up to 9 rounds	1	3-4

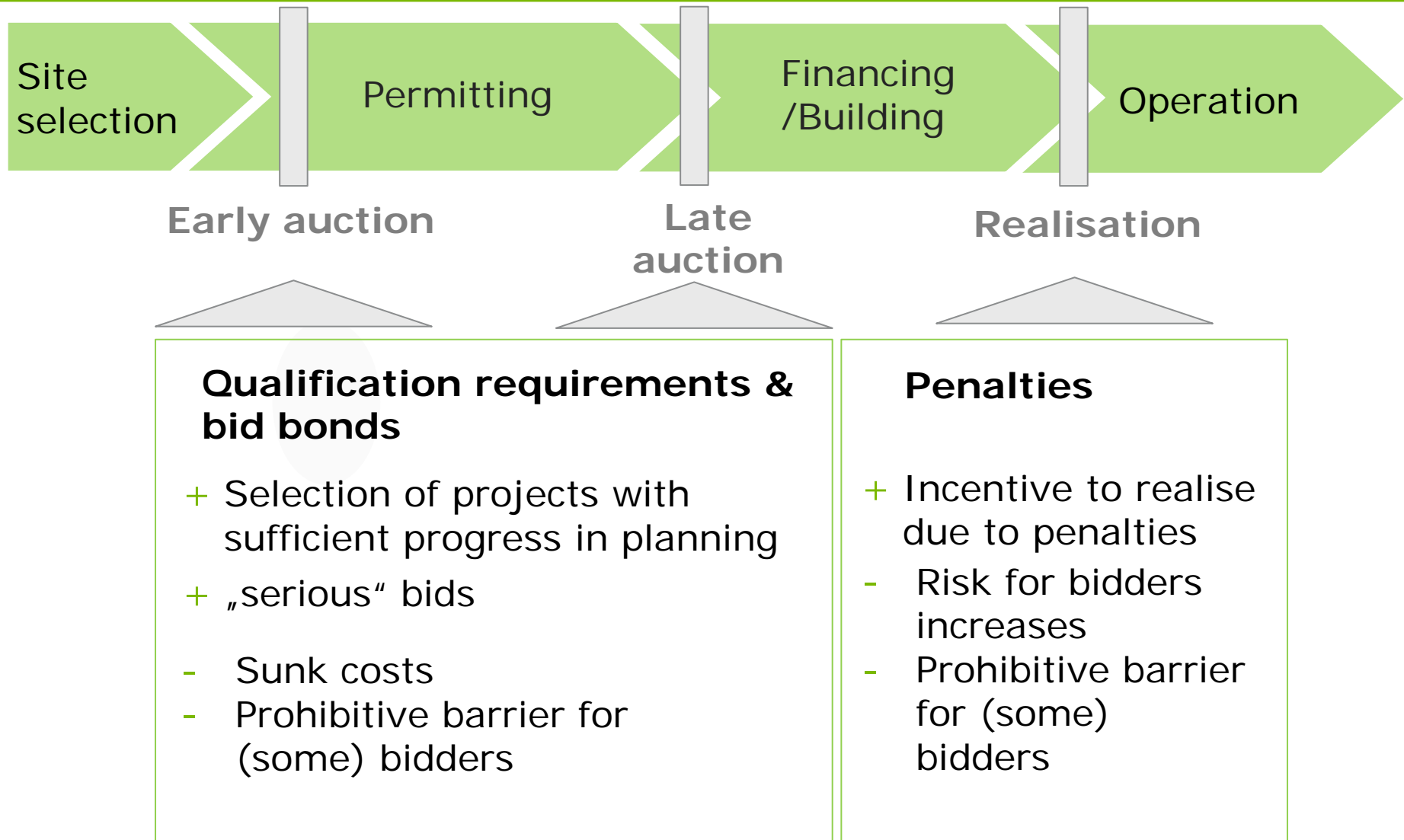
Design: Pricing rule

- > Pay-as-bid price rule: each bidder receives the price he/she offered (P_x)
- > Pay-as-cleared (uniform) price rule: each bidder receives the clearing price (P_{max})



	FR	UK	NL	IT	DE
Evaluation criteria	Price & carbon footprint	Price	Price & timing of application	Price (auction), quality (registry)	Price
Price rule	Pay-as-bid	Uniform (by delivery year)	Uniform by round	Pay-as-bid (auction), fixed tariff (registry)	Pay-as-bid & Uniform
Max./Min price	None	Max. price	Max. price	Max. & min. price	Max. price

Design: Qualification requirements and realisation periods determine the timing and the realisation rate of the auction



Designing qualification requirements and penalties is a crucial part in auction design

Lessons learnt regarding qualification requirements and penalties

- > The timing of the auction has a major impact on the auction result and should be in line with project development cycles
- > A combination of project-specific prequalification and financial penalties tends to be most effective for reaching high realisation rates
- > Project specific prequalification and financial penalties need to be in balance
- > Financial penalties need to be backed up with a reliable security (bid bond)
- > Sunk cost should not be much higher than approx. 5% of the investment cost
- > The realization time should take technology-specific project development and permitting process into account and allow for some delays in the project

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Auction design in Europe varies, but some best-practices have emerged

AURES analysed past implementations in:

Eight European countries



Four non-European countries

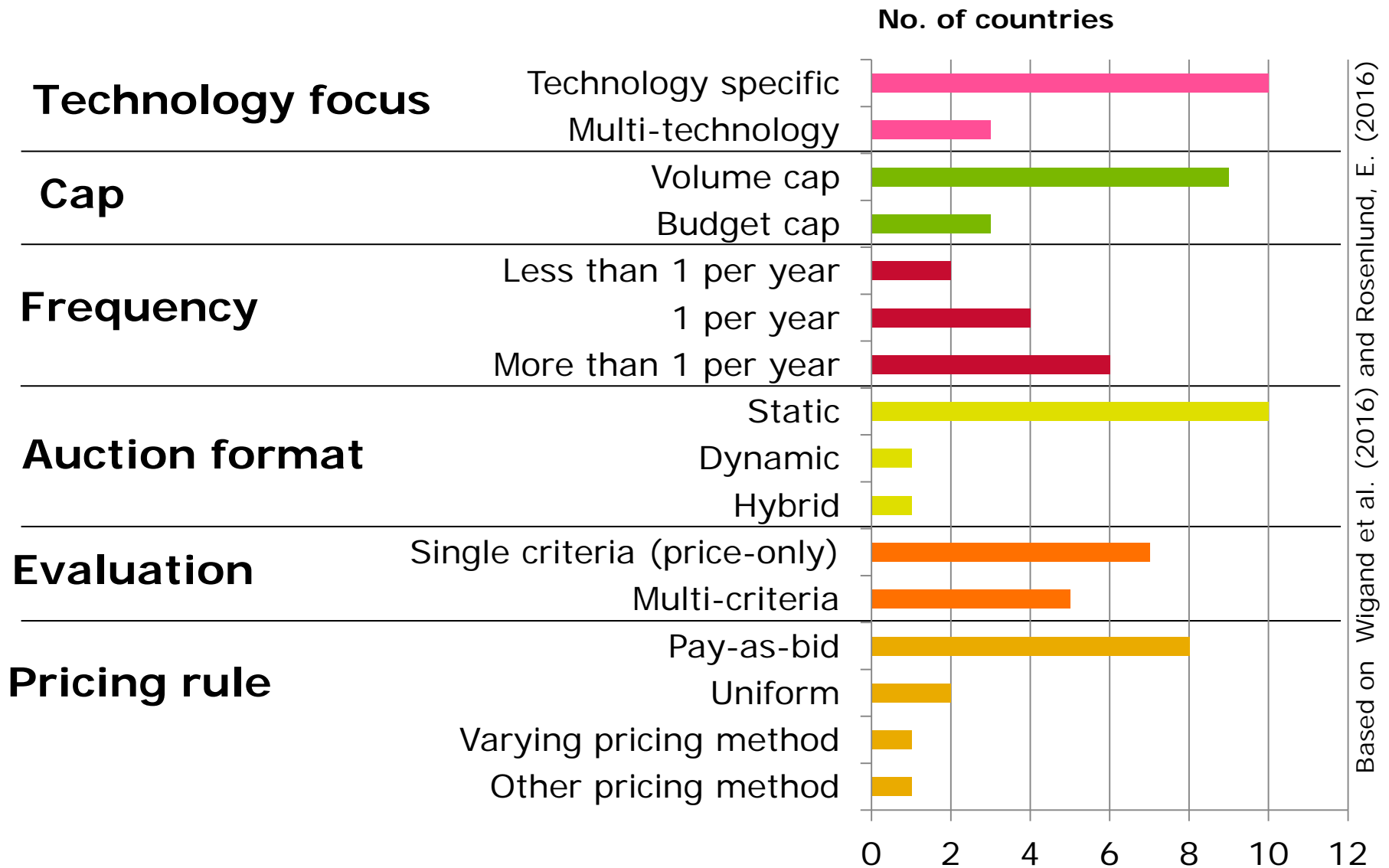


Future/ongoing implementations in:

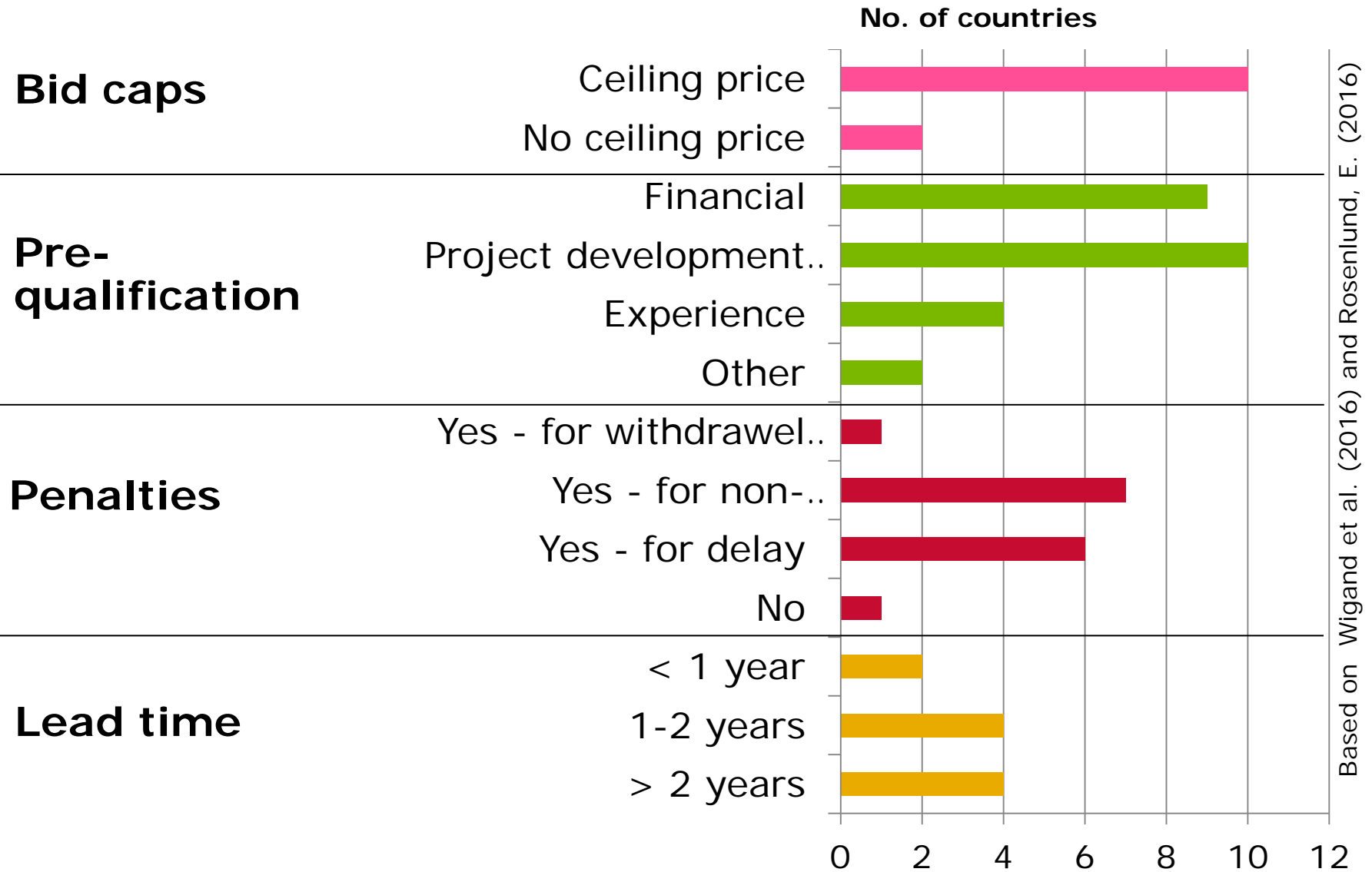


All reports can be downloaded at www.auresproject.eu/publications

Auction design in Europe varies, but some best-practices have emerged



Auction design in Europe varies, but some best-practices have emerged



AURES has identified common auction design features and recommendations

Elements applied in most countries	AURES design recommendations to the new EU RE Directive
Technology specific auctions	Leave flexibility to use technology-specific schemes
Volume caps	Volume caps preferred to budget caps (but depends on political preference)
Auctions at least every year	Higher frequency avoids disruption, but do not prescribe frequency
Static auctions, mostly pay-as-bid	Do not prescribe specific auction type
Ceiling prices	Require ceiling prices
Single or multi-criteria auctions	Price should be preferred selection criterion, but secondary criteria allowed if well founded
Financial and material prequalification requirements; penalties	Require both pre-qualification requirements and penalties; specific design left to MS
	<i>Reliable auction schedule (short and long term, appropriate monitoring)</i>

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Use the support of the AURES project when assessing auctions

Expert advice

- We have a dedicated work package **to support countries** in their renewable energy auction design, e.g. through a telephone conference with experts or commenting drafts
- Please **contact us** if you have any questions, would like to discuss design options or just wish to receive further information.

Online policy tool

- We are also creating an **interactive** policy support tool for policy makers and industry stakeholders → online version will be available next year, but opportunity to have interactive session at next Energy Community meeting



Thank you!



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Backup- relevant questions to assess when designing auctions



Policy goals
Technologies
Target volume and trajectory
Support type

Market size
Types and number of market players
Milestones of project development
Main project risks

Auction object
Auction volume
Auction schedule
Type of auction
Qualification requirements
Delivery period
Penalties
Price rule
Min/max price
Others

Legal implementation
Evaluation
Adjustment of auction design