The effects of auctions on financing conditions for renewable energy projects

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AURES II: EU funded research collaboration on auctions for renewable energy support

CSIC
Consejo Superior de Investigaciones Científicas

University of Exeter

REKK

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NAVIGANT

Fraunhofer ISI

Factor
Ideas for change

DTU

TU WIEN
Technische Universität Wien

eclareon

Takon GmbH
Spieltheoretische Beratung

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Work stream on impact of auctions on cost of capital

Partners

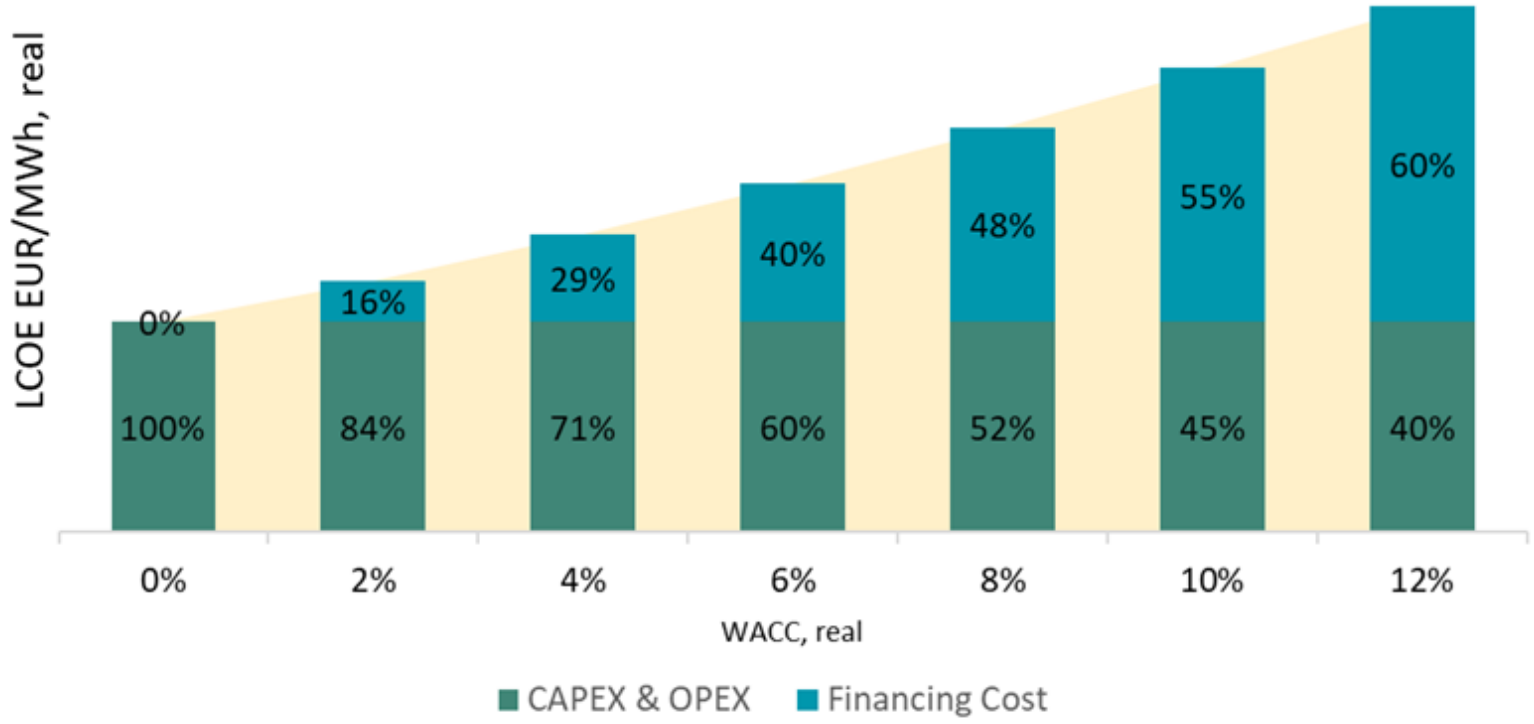
- Lead: Technical University of Denmark (DTU)
- Eclareon, Navigant, Fraunhofer ISI, REKK, TU Wien

Background for this presentation

Main deliverables

- Report "Effects of auctions on financing conditions for renewable energy"
- Stakeholder survey: 140 interviews with financing experts across EU 28
- Report on auction designs compatible with financing

Wind energy projects are CAPEX intensive and sensitive to financing costs

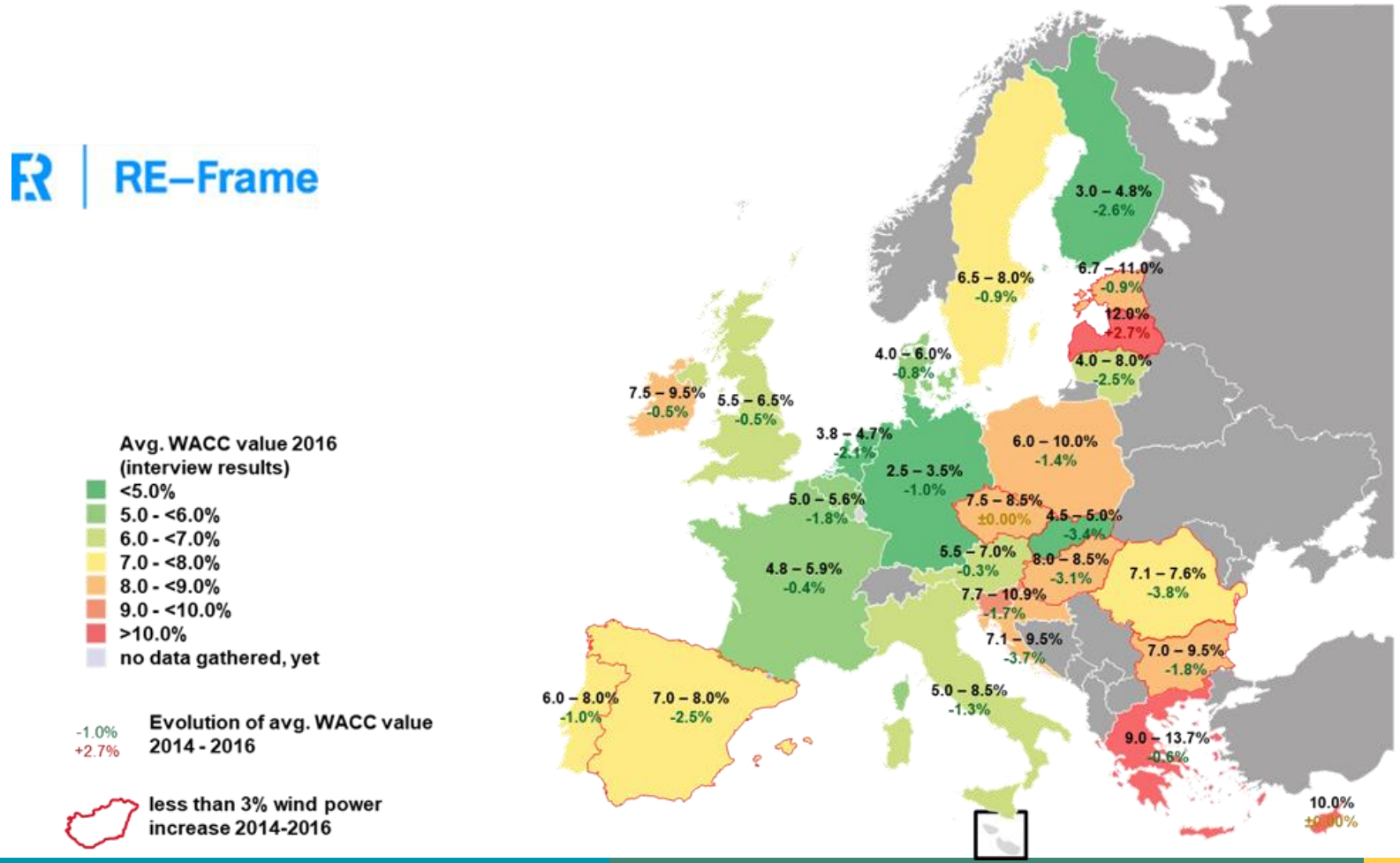


Share of financing costs in LCOE for 20 MW onshore wind farm is 50% at WACC of 8%

De-risking would enable governments to reduce support costs

*calculation highly dependent on input assumptions

Differences in costs of capital affect distribution of RE in EU power system



Highest cost of capital in Southeast Europe – Croatia at around 7.1% WACC in 2016

RE capacity constructed not where there is most potential but where financing costs are lowest (Ondraczek et al. 2015)

Scope and methods

AUCTION SCHEMES (bidding for support)

PREMIUM SYSTEMS (selling in the market)

FINANCING CONDITIONS

Cost of Capital

1. Weighted average cost of capital (WACC)
2. Cost of equity
3. Cost of debt
4. Debt-to-equity ratio
5. Hurdle rate premium

Loan conditions

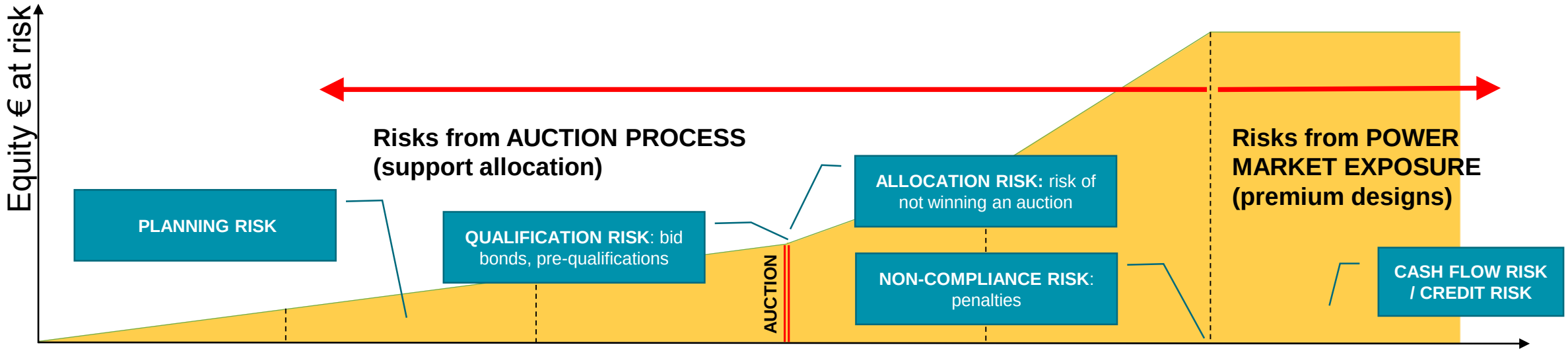
6. Debt Service Coverage Ratio (DSCR) requirements
7. Loan maturity

METHODS: 1) Review of financial theory
2) Stakeholder workshop at Wind Europe Bilbao 2019
3) Seven interviews with project developers and bankers from UK, DE, DK

TECHNOLOGY FOCUS: onshore & offshore wind

GEOGRAPHICAL COVERAGE: Western Europe

Risks from auction designs and mitigation options



Pipeline / Pre-development	Project Development	Bid preparation / Pre-qualification	Financing	Construction	Operations
Challenges	Growth limits and cyclical investments	Pre-financing and liquidity issues			Revenue unpredictability
Mitigation options	Long term auction schedules and freq.	Investor support (public loans …)		Ensure high share of secured income Suitable price floors (e.g 2 sided CfD)	

Key message 1

- Auction designs such as bid bonds and pre-qualification requirements could have an effect on **cost of equity** in early project development stages, especially for smaller market actors. These do not have a large impact on costs of debt, as banks get involved in projects only after the auction and when the PPA has been signed

Example: liquidity impact of bid bonds on different market actor types

Country	Technology focus	Bid Bond sizes	
		1. BB	2. BB
Solar PV 2 MW			
Germany	Solar PV	4 €/kW	50 €/kW
Italy	Multi	5% of CAPEX	10% of CAPEX
Onshore wind 20 MW			
Portugal	Wind and biomass	10 €/kW	25 €/kW
Spain	Onshore wind and biomass		20 €/kW
Italy	Multi	5% of CAPEX	10% of CAPEX

Key message 2

- The remuneration systems (one sided vs. two sided CfD vs. fixed FIP) exhibit the greatest impact on **costs of debt**. This is because they directly affect the revenue predictability of projects, and therefore affect the ability of projects to repay debt. Systems with more price risk, also affect loan tenor and DSCR in a negative way

Key message 3

- The extent of the effects of individual auction designs on financing conditions, will mostly depend on the **type of actor involved**, and their ability to diversify risk and/or absorb potential sunk costs. Smaller actors might experience a greater impact on financing conditions, than larger actors (energy cooperative vs. utility)

Key message 4

- Auctions could exhibit a positive impact on costs of capital, by enabling **greater support scheme sustainability** and predictable roll out schedules

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