

H2020 Project: Auctions for Renewable Energy Support

8th Renewable Energy Coordination Group

Energy Community Secretariat, Vienna, 12 November 2019

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



Funded by the European Union's **Horizon 2020** Framework Programme for research and innovation (2018 – 2021)

AURES II – objectives



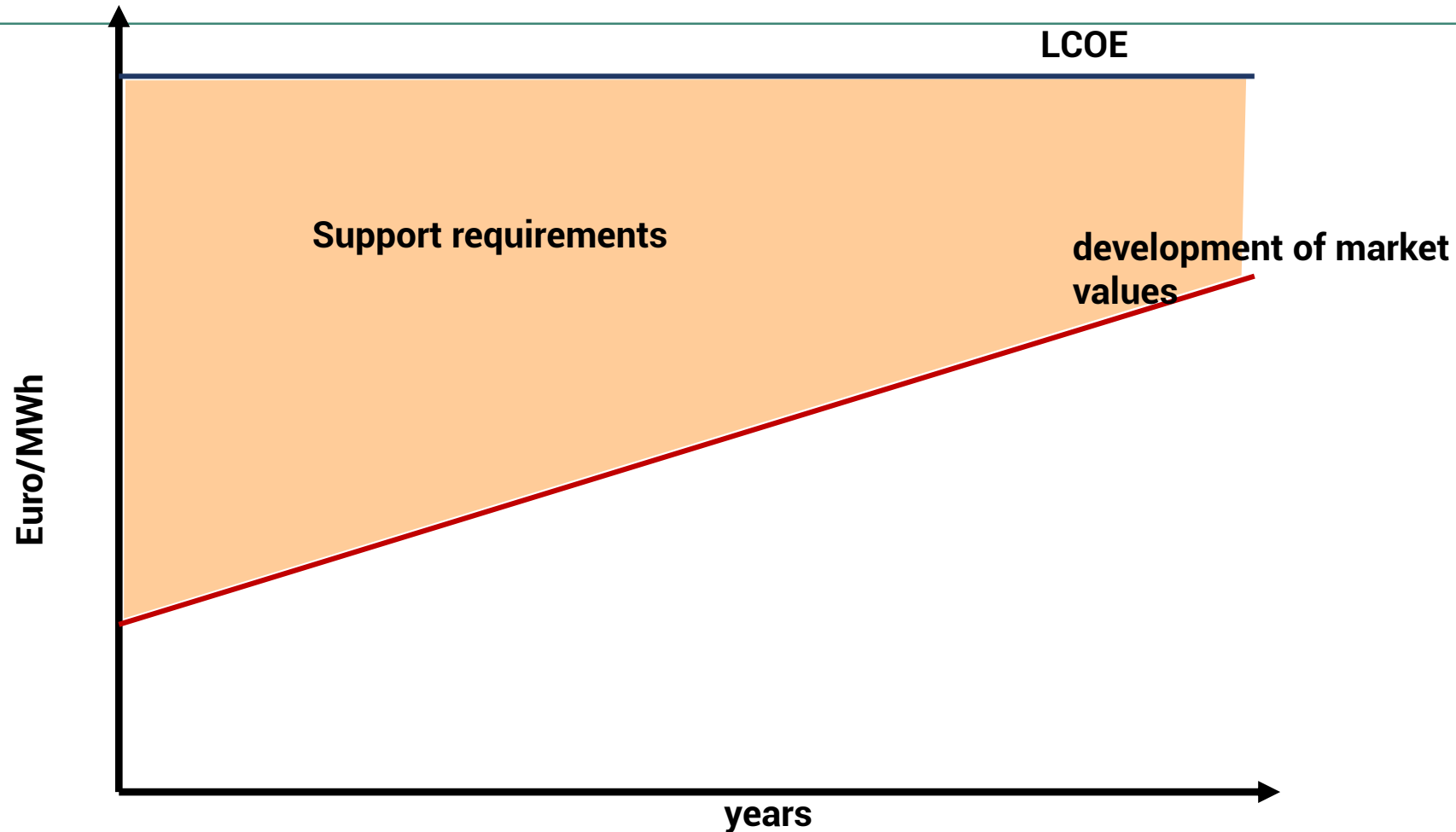
1. Generate and communicate new insights on the applicability, performance, and effects of **specific auction designs**
2. Provide **tailor-made policy support** for different types of auction applications
3. Facilitate **knowledge exchange** between stakeholders

Focus today

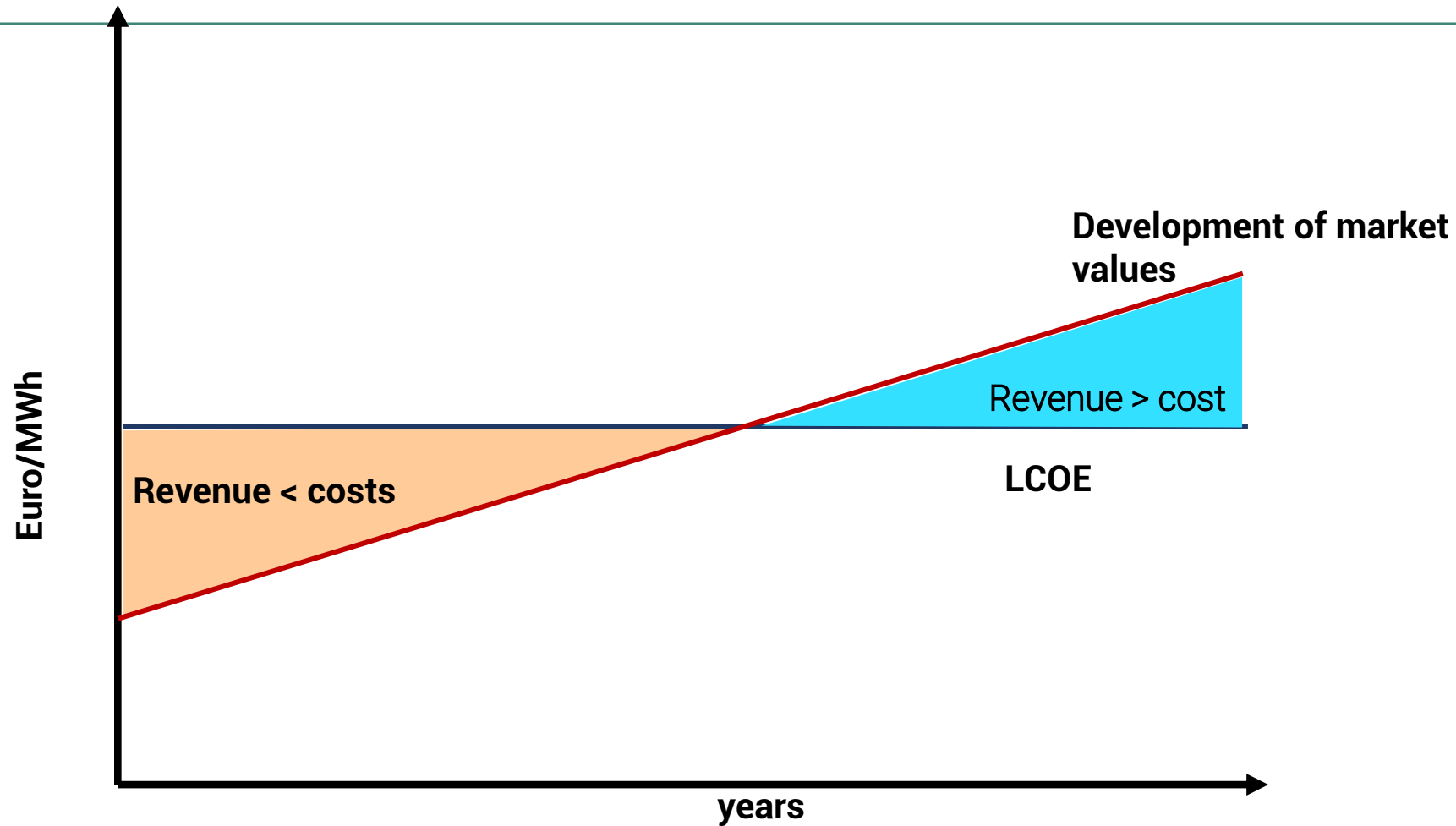


Effects of remuneration schemes in combination with auctions

In the past renewable generation costs always above market values/ revenues



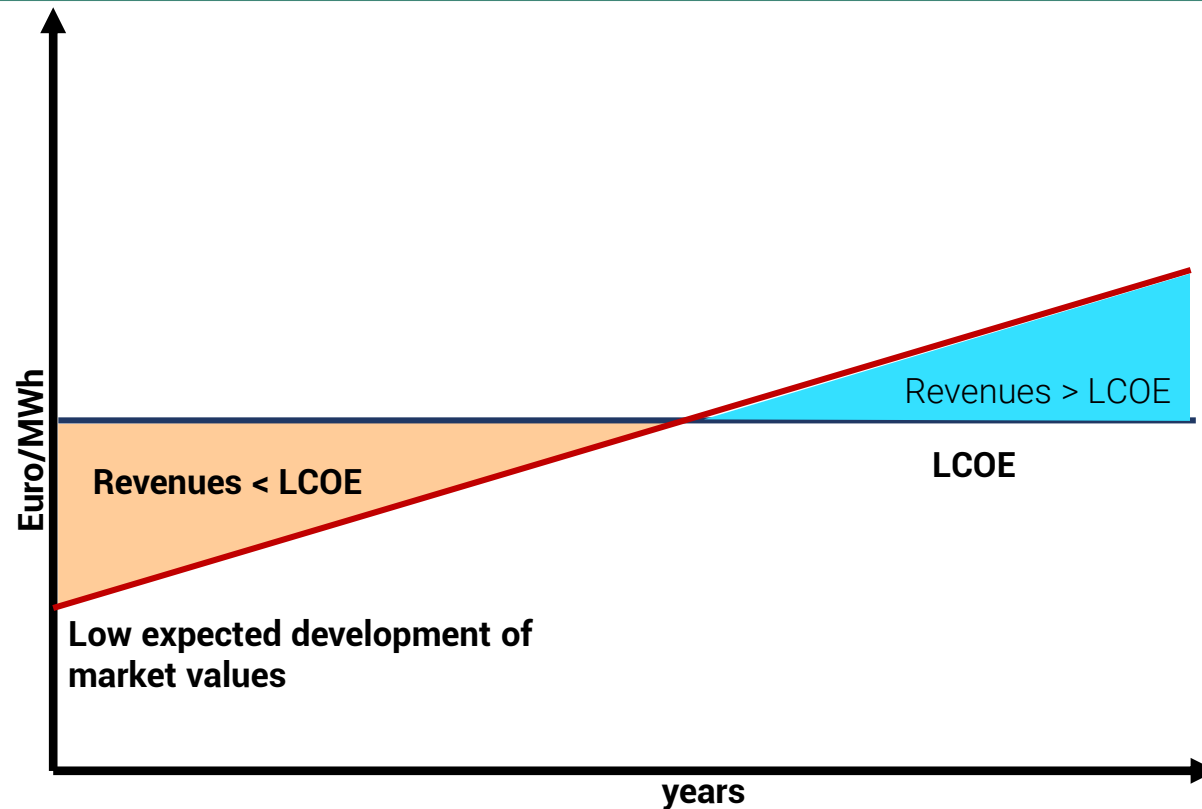
Now LCOE at least partly below market value/ revenues



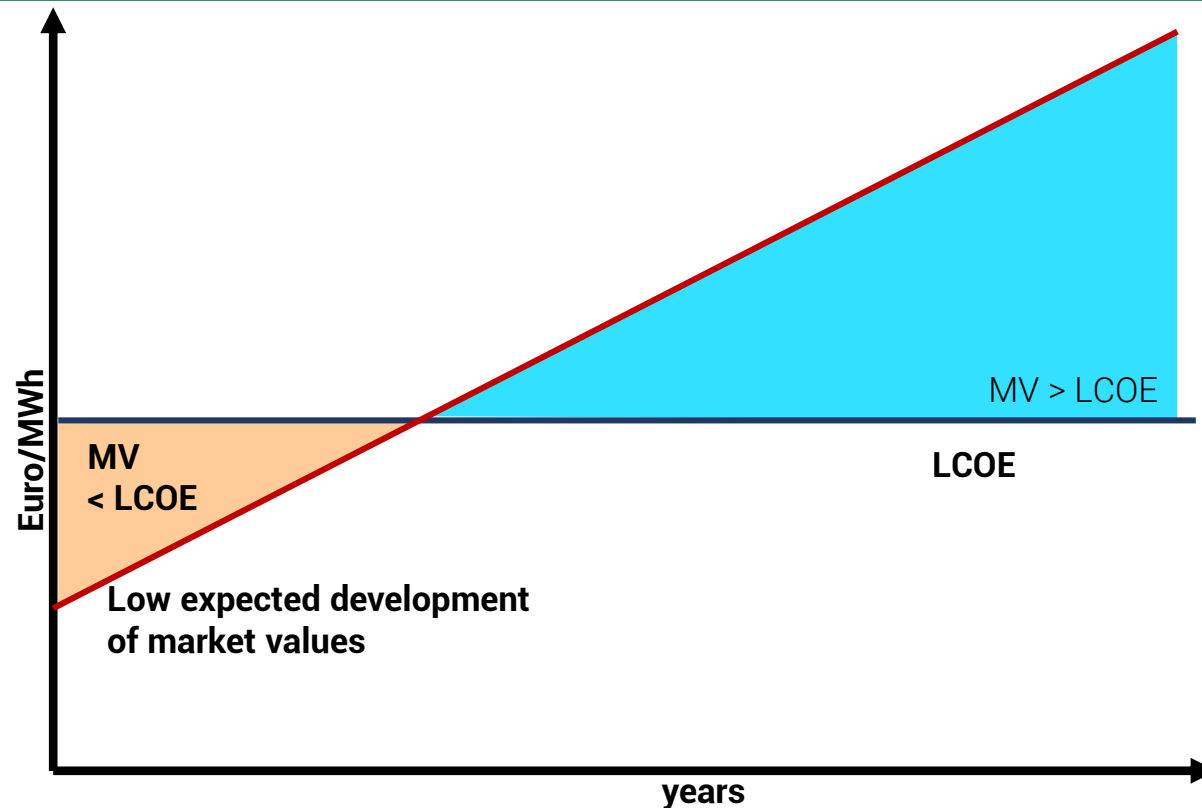
Auctions shall identify plants with lowest support requirement

- Low support requirements if
 - gap between costs of electricity generation (€/MWh) and
 - electricity market revenues (€/MWh)is minimized.
- If LCOE > market values
 - minimize LCOE!
- If market value partly > LCOE
 - current case: Selection of „optimal“ plants depends on future market value development
- If market value > LCOE
 - no support necessary, market-based expansion (or auctions for land rights as in Montenegro)

Expected market values and risk get more important



Expected market values and risk get more important



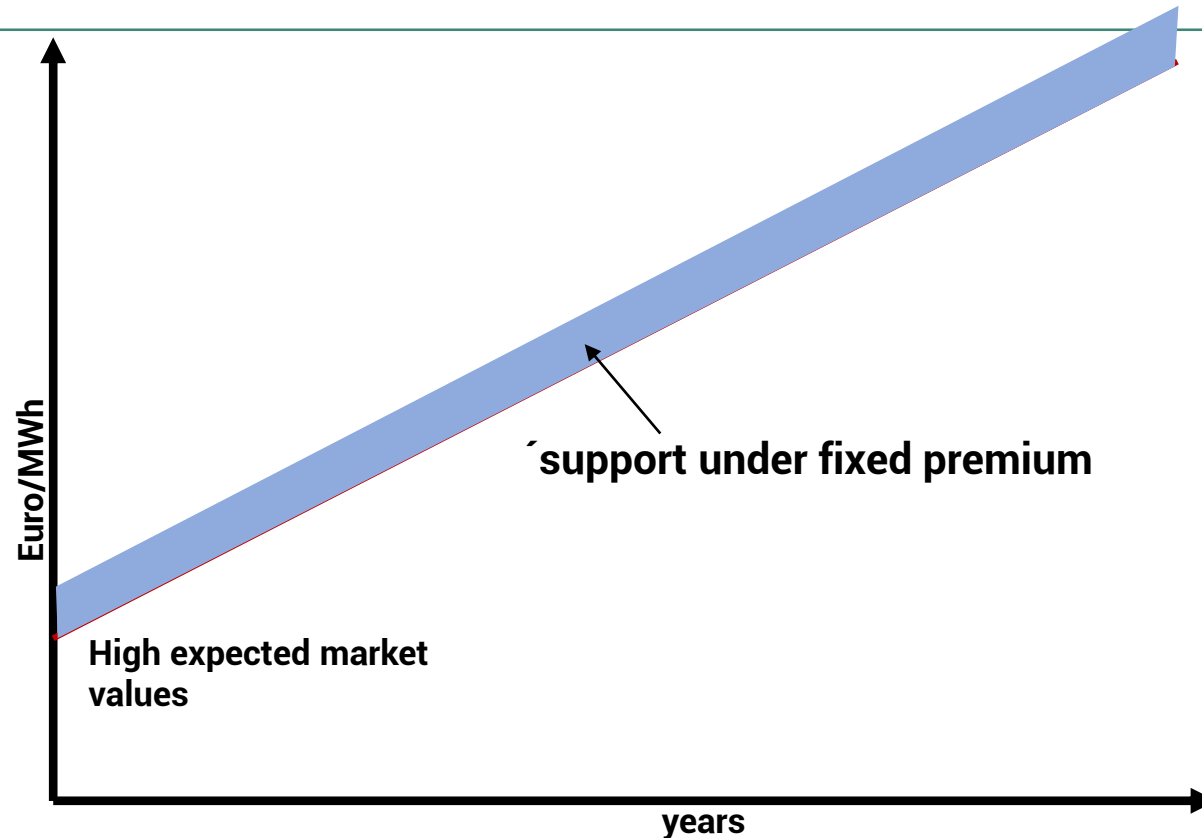
- LCOE are known
- Uncertain market price development influences support requirements and bids (depending on support regime)

Fixed premium (FP) vs. sliding premium (GP)

Disclaimer:

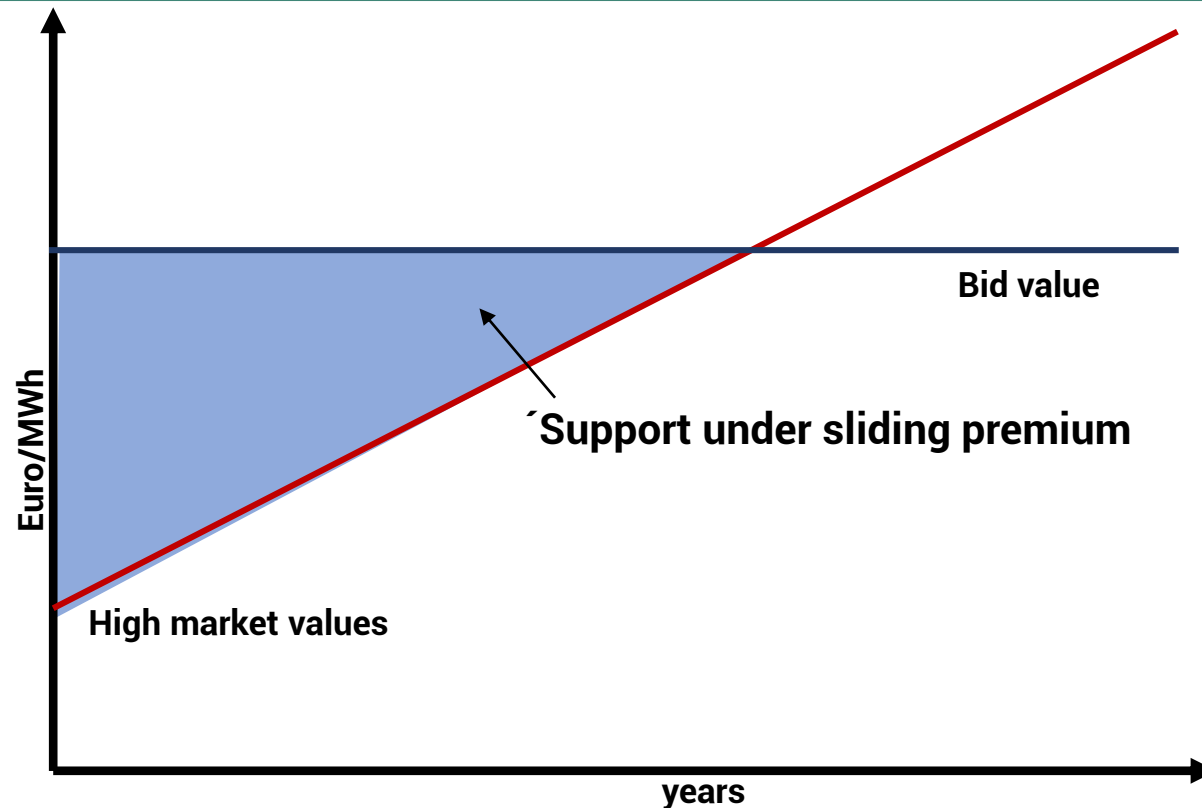
- A sliding premium corresponds to a one-sided CfD
- two-sided CfD not considered here, but implies lowest risk and easiest determination of bid value as market values do not play a role and plants can bid LCOE

Bids for fixed premium consider long term development of market values



- Payment of fixed premium independent of market values
- Overall revenues depend on market price developments

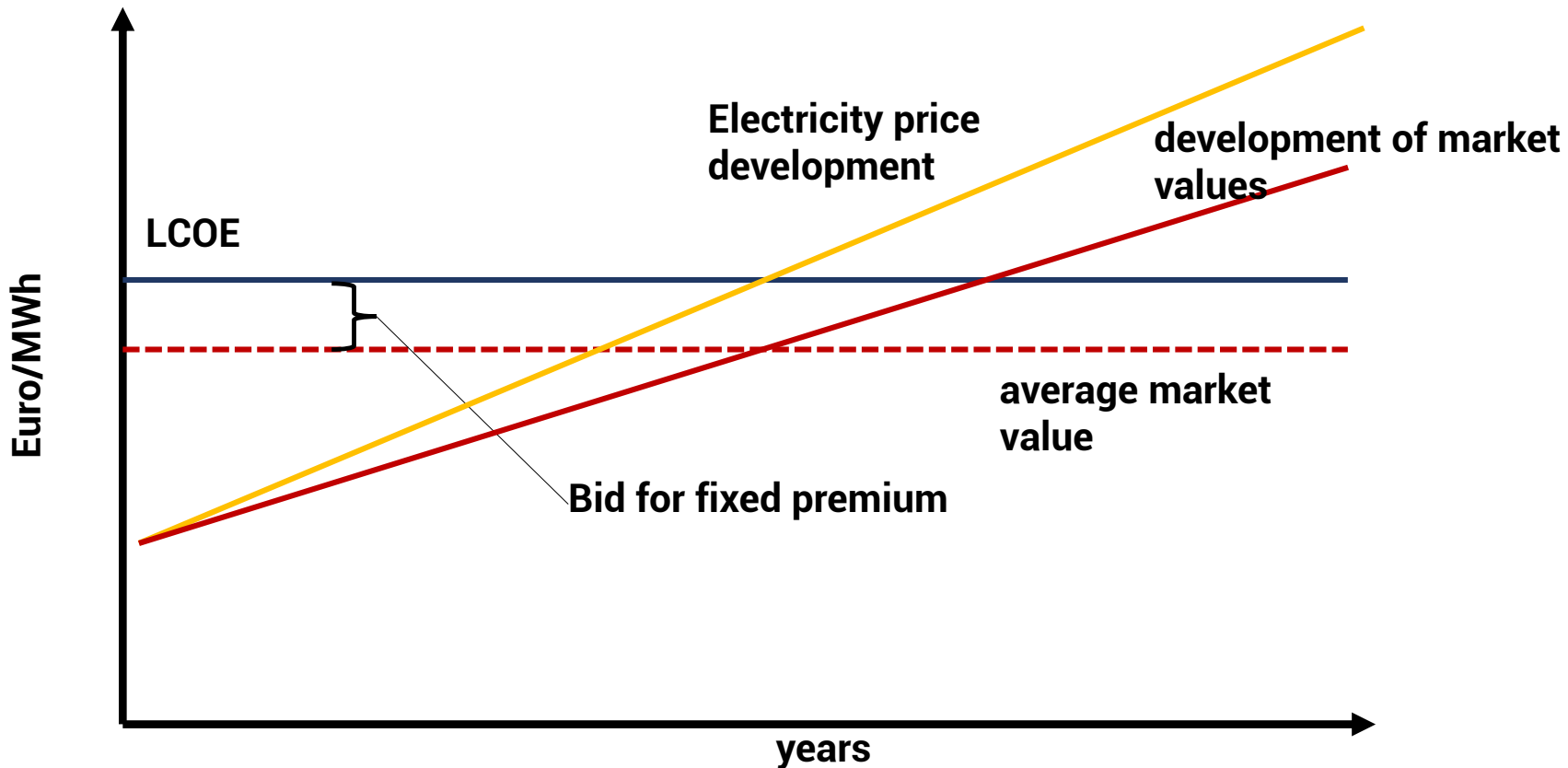
Bids for sliding premium impacted by market price expectations only if LCOE low



- Payment of sliding premium depends on market price development
- Overall revenue depends on market prices only if these are high

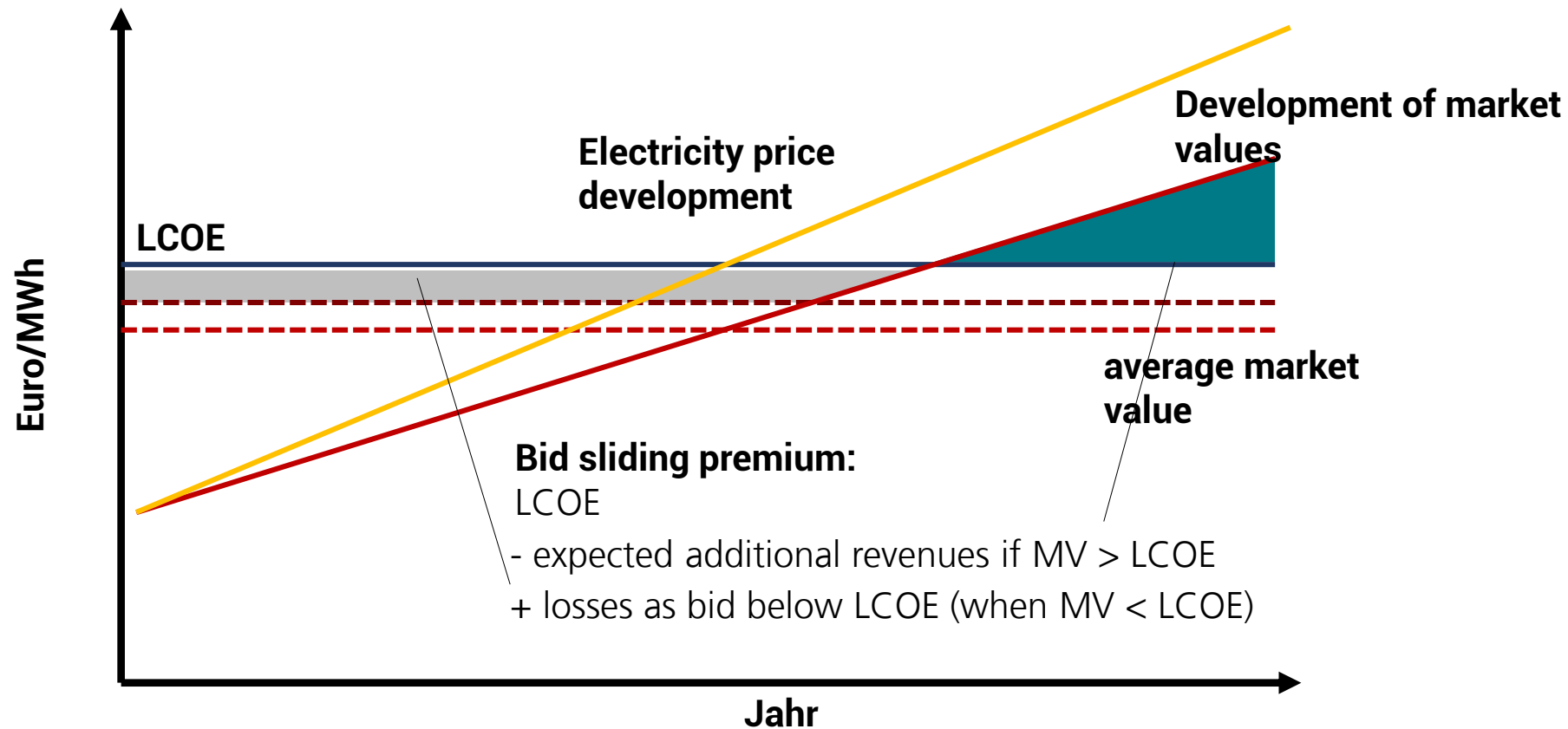
Bids for fixed premium if market values partly > LCOE

- Long term market values are considered in bid
 - Bid value: $\text{LCOE} - \text{average expected market value}$

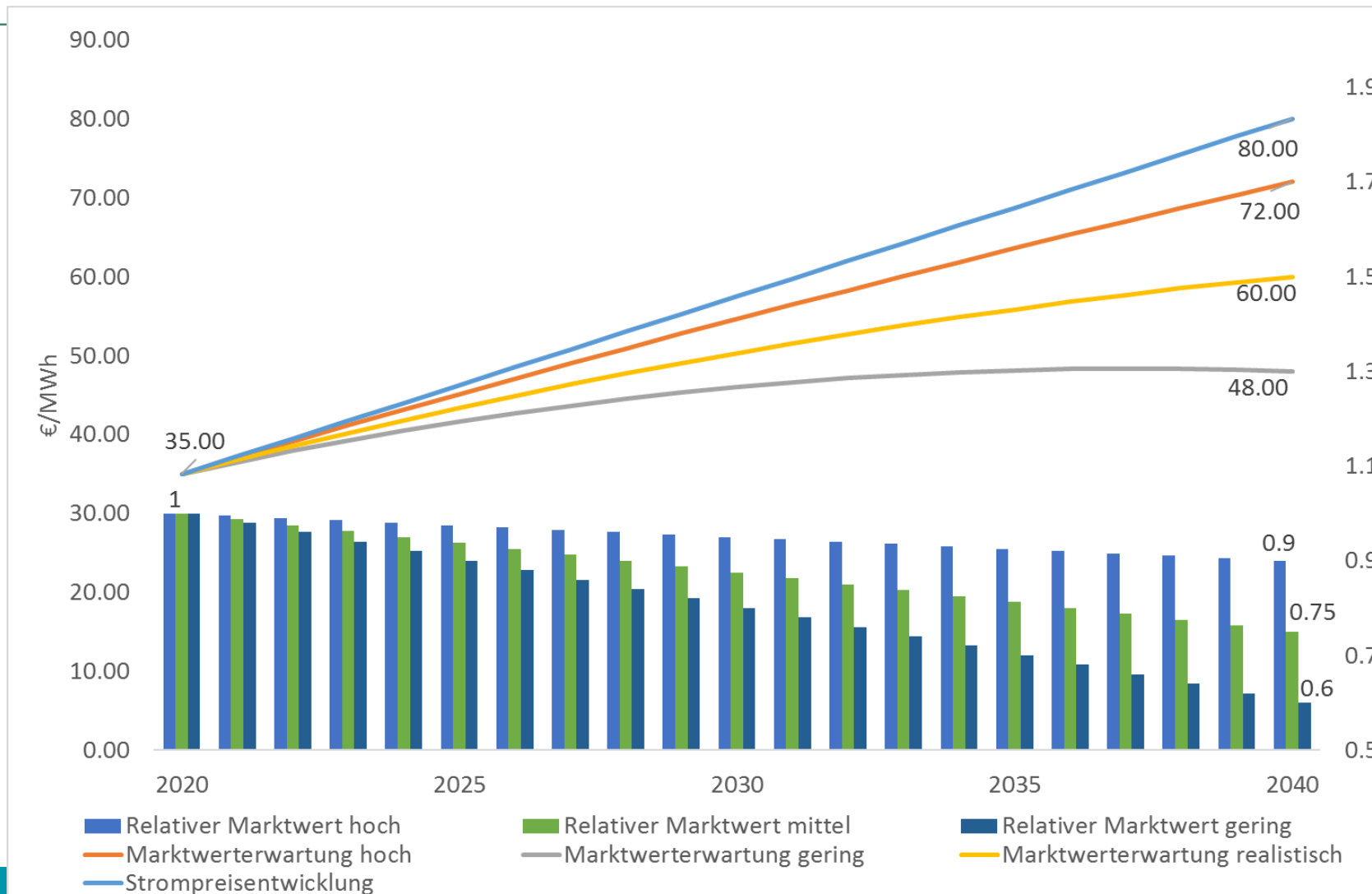


Bids for sliding premium if market values partly > LCOE

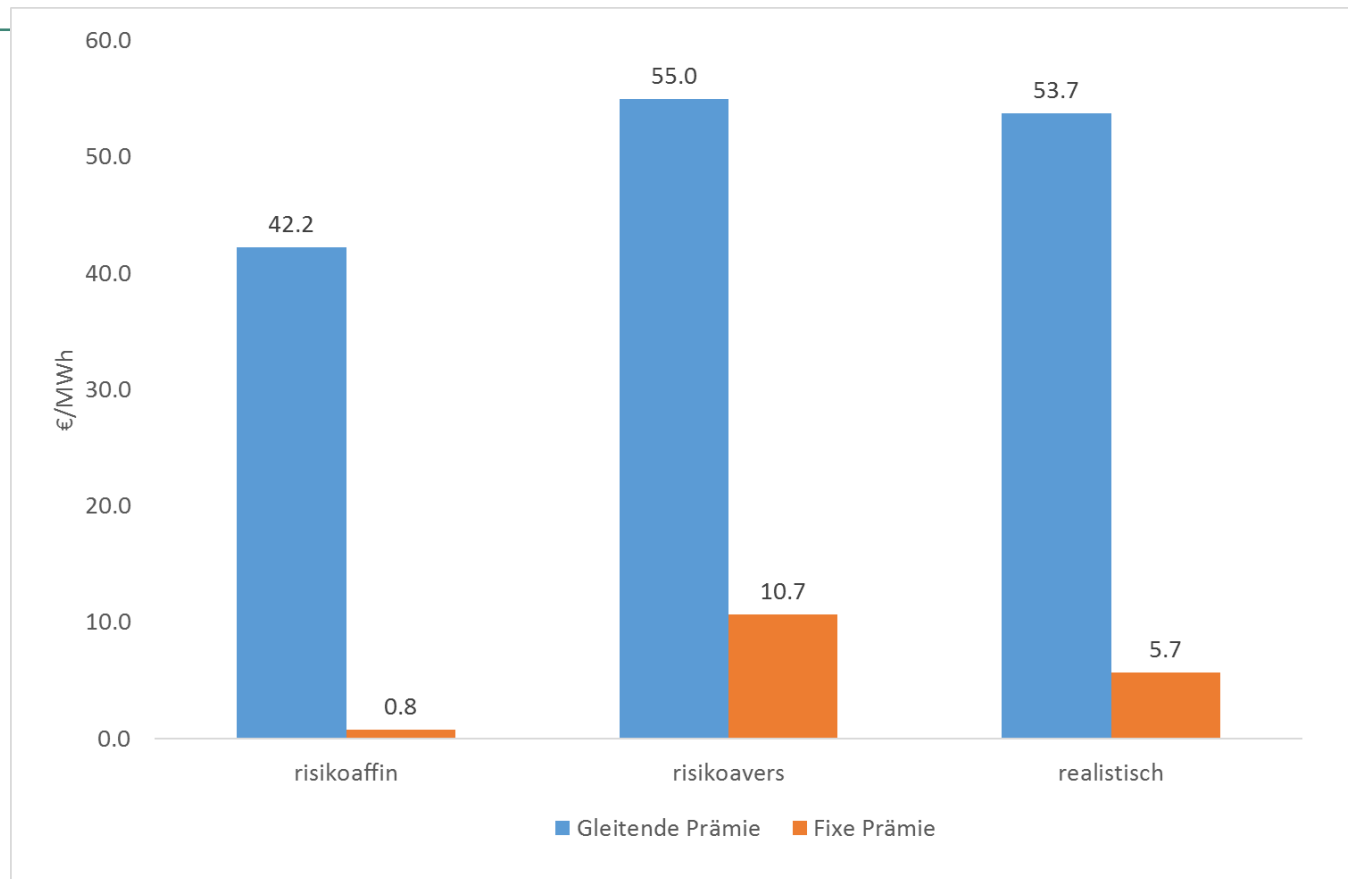
- Long term market values considered as well



Assumption: 3 bidders with different expectations regarding market values



If LCOE are equal, expected MV influences the bid values



Sliding premium (SP):

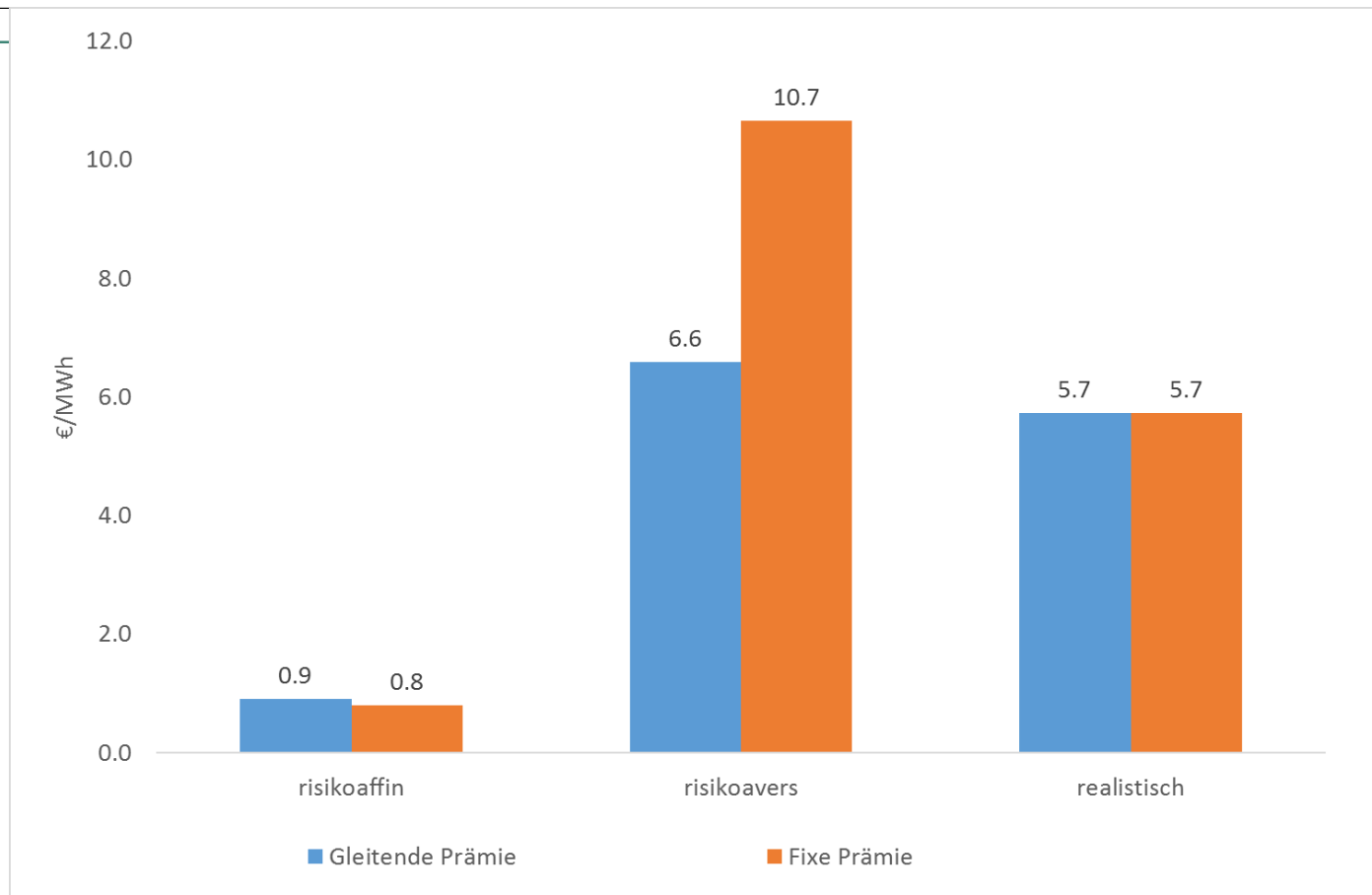
Bid for reference value (in blue)

Fixed premium (FP):

Bid for fixed premium (in orange)

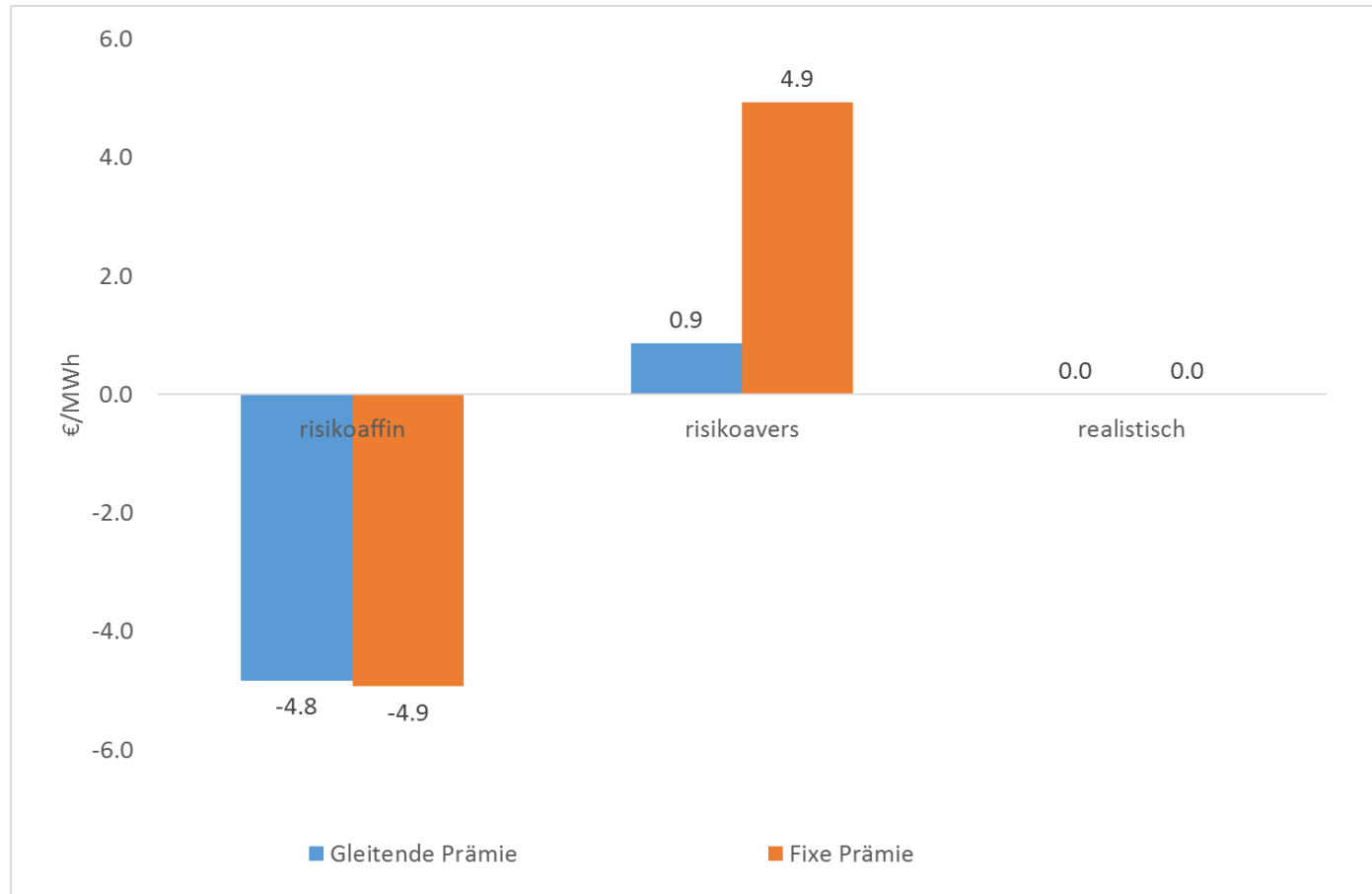
- Assumptions: LCOE= 55€/MWh, real average market value 49€/MWh
- different MV assumptions (high, low, realistic)

Realistic MV expectation: support costs equal under FP and SP

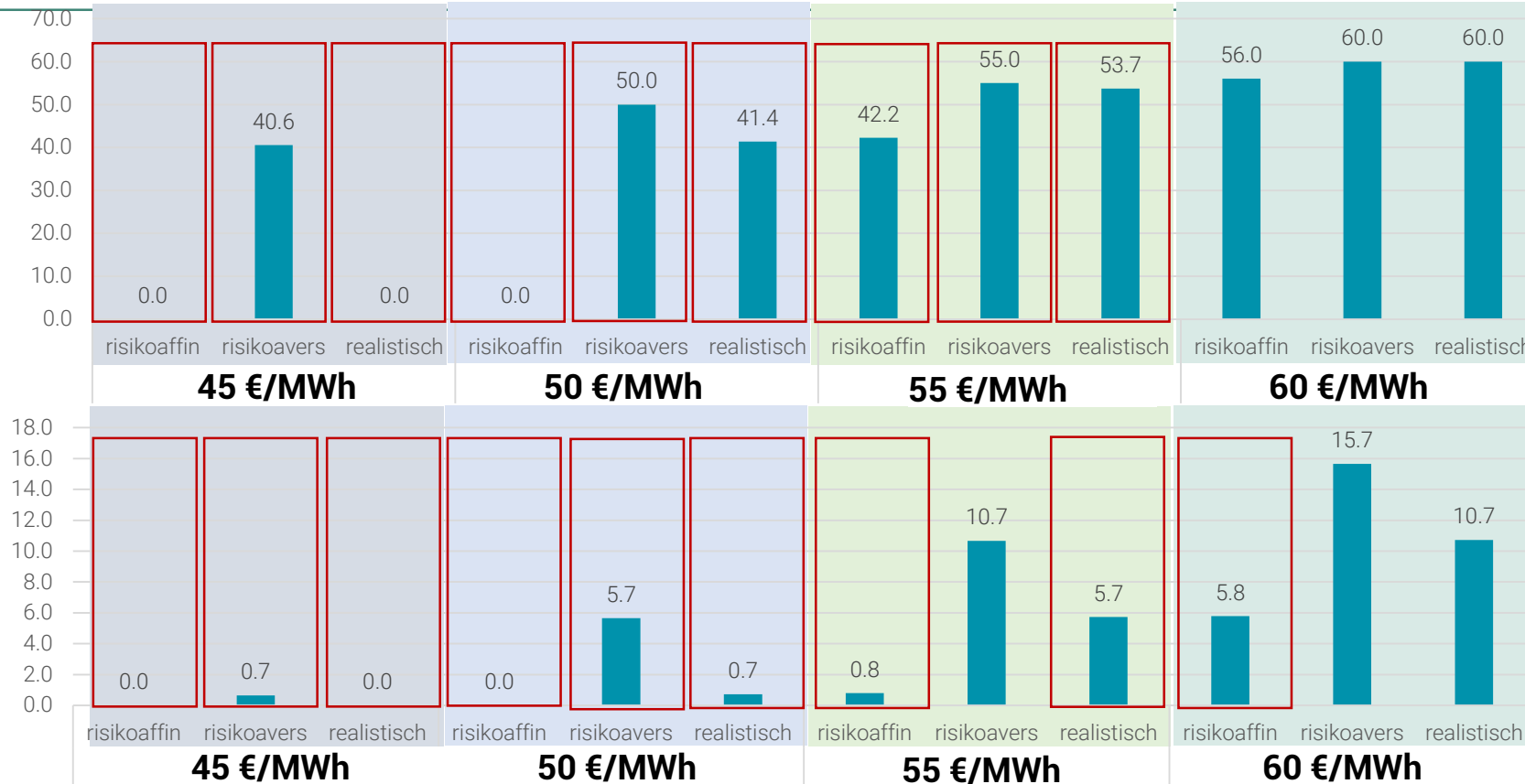


- same support costs under perfect foresight (correct expectation about MV)
- Too high and too low support more pronounced under fixed premium

FP implies higher profits or losses for plants with differing MV expectations



Efficiency of FP and SP similar regarding the selection of plants with low LCOE



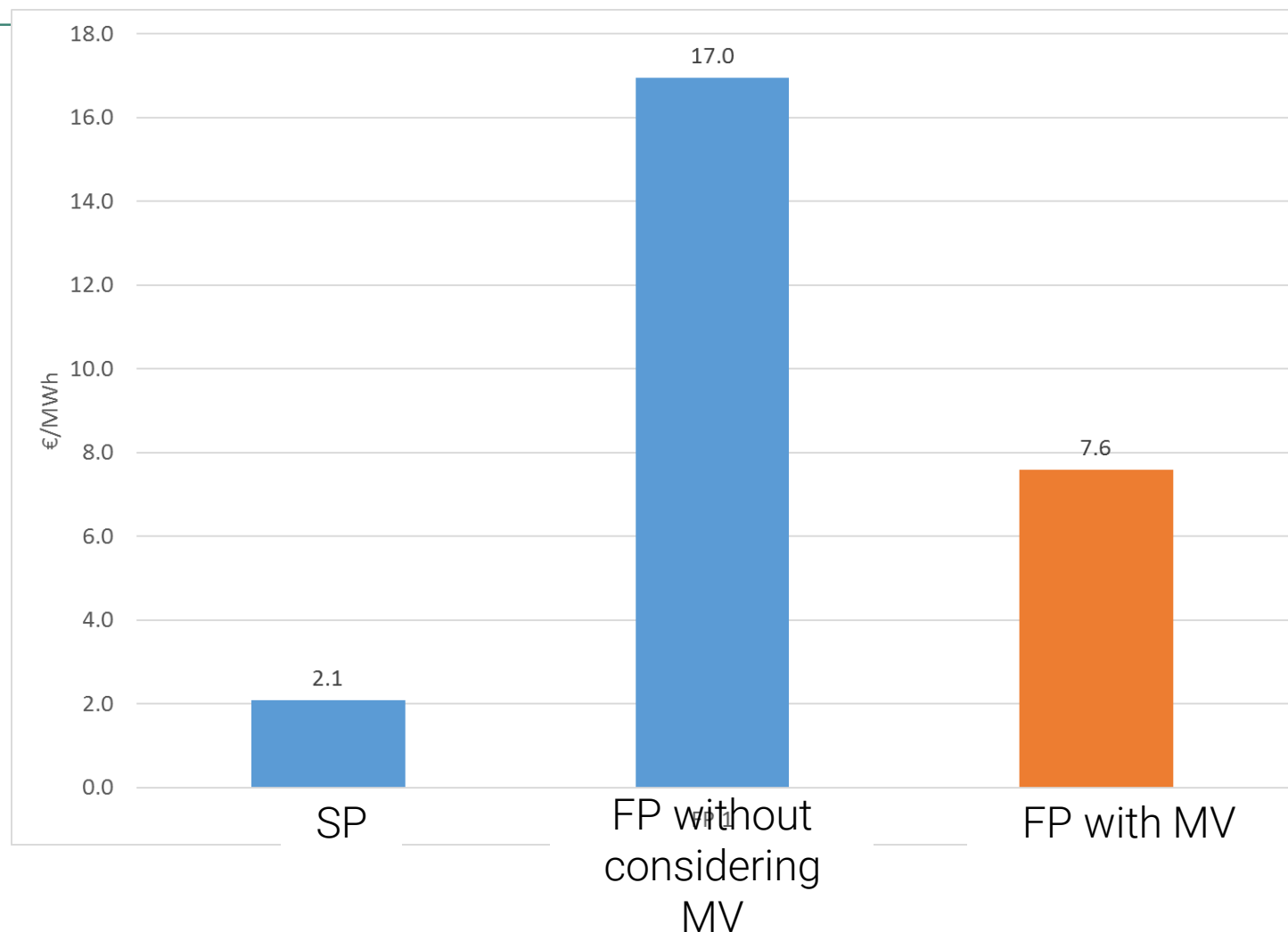
- Bidders with high expected MV (risk loving) are selected preferentially
- Effect is slightly more pronounced under fixed premium

Fixed premium increases financing costs and thus LCOE

	Share of certain revenues	WACC	LCOE
SP	80%	3.0%	51.4 €/MWh
FP (considering MV)	50%	4.5%	56.9 €/MWh
FP (not considering MV)	10%	6.5%	64.6 €/MWh

- Assumptions: debt interest rate : 2%, equity interest rate: 7%
- Share of stable revenues determines debt ratio
- Under sliding premium bid value corresponds to stable revenues
- Under fixed premium, only premium is totally stable (FP not considering MV)
- FP considering MV acknowledges 40% of expected market value as stable

If financing costs are considered support costs higher under fixed premium



Summary sliding vs. fixed premium under auctions



- LCOE currently partly below MV → **Expected MV** also relevant for bids under SP
- Impact of **differing MV expectations** important for efficient plants **selection** as well as support costs, profits and losses
- **Higher danger of losses and profits** under fixed premium
- **Fixed premium implies** lower share of stable revenues, implying **higher financing costs** or worse financing conditions and higher LCOE

New and upcoming reports of AURES II



- [“Effects of auctions on financing conditions for renewable energy”](#)
- Case studies: available for [Poland](#) and [UK](#), upcoming: CSP, Offshore wind, Denmark, Chile, Mexico, Argentina, Canada, Portugal, Saudi Arabia, Greece, Germany
- [Design Options for Cross-Border Auctions”](#)
- [“Auction-Theoretic Aspects of Cross-Border Auctions”](#)
- Auction database and quantitative evaluations
- Research paper on multi-technology auctions
- Policy brief Ukraine

Next events

22 November 2019 in
Vienna
2nd Regional Workshop
Community Energy

29 November 2019 in
Copenhagen
3rd Regional Workshop
Offshore Energy hub in the
North Sea

May/June 2020 in
Berlin
4th Regional Workshop



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