



Weighted Average Cost of Capital – a Game Changer (?)

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Why is cost of capital relevant for RES development?

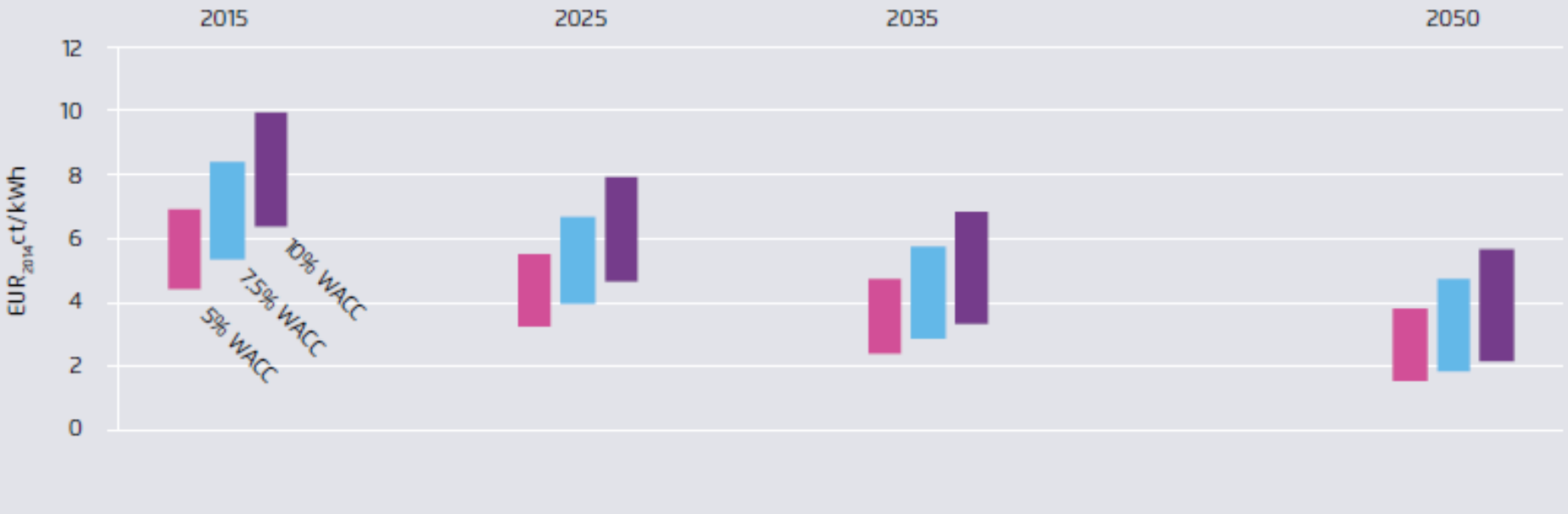
What is the current development in Europe?

Conclusions

Relevance from LCOE perspective

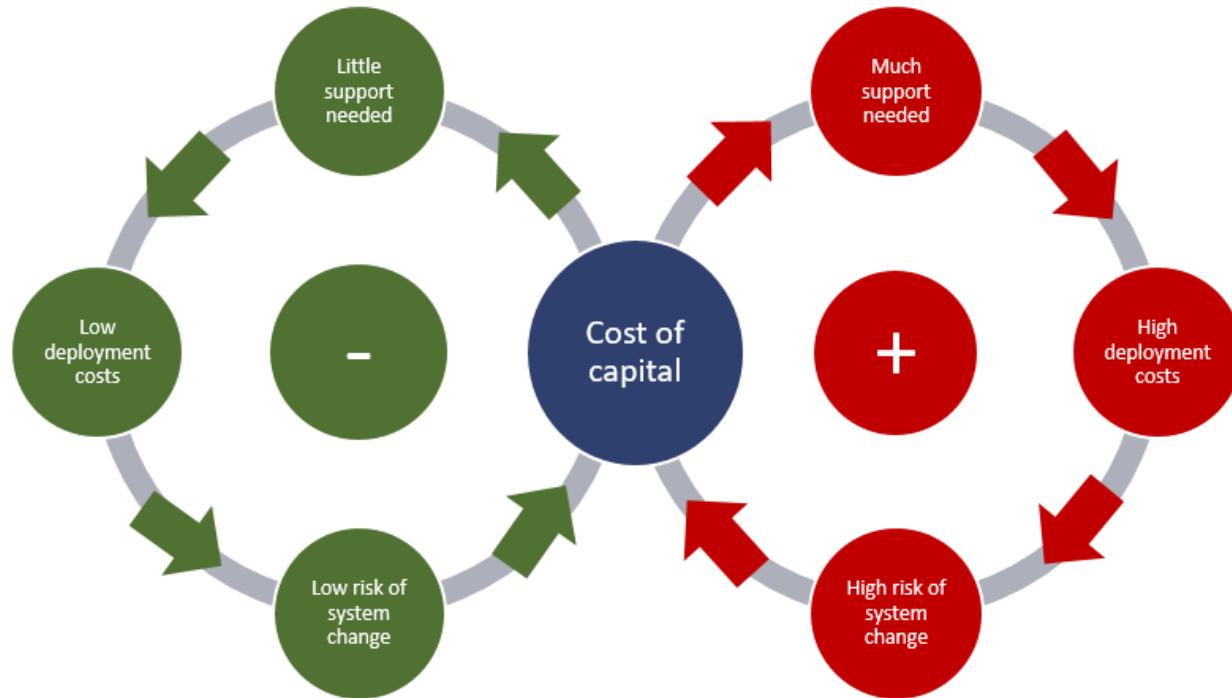
LCOE Spain (1350 - 1900 kWh/kwp p.a.); WACC between 5% and 10%

Figure 58



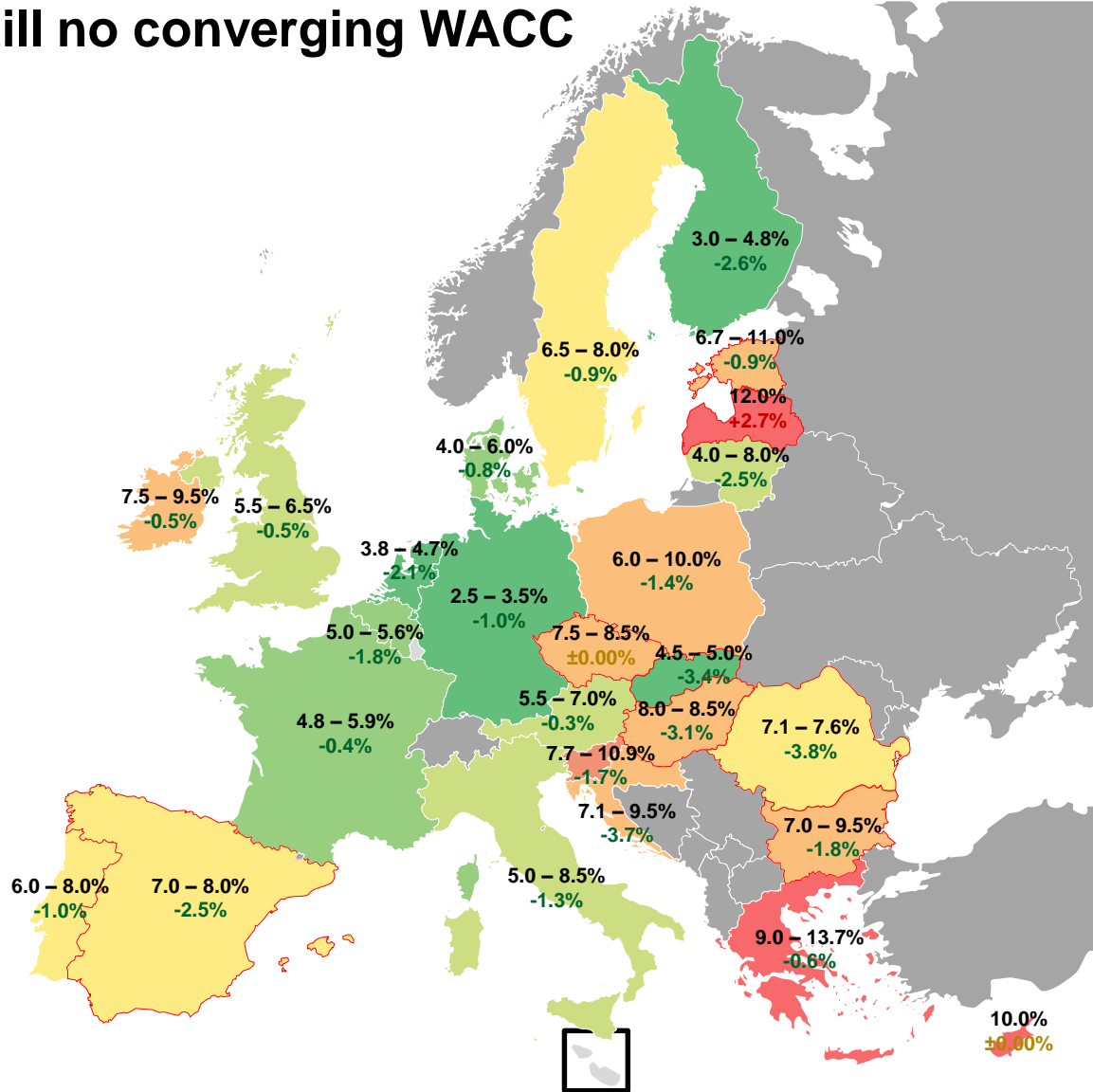
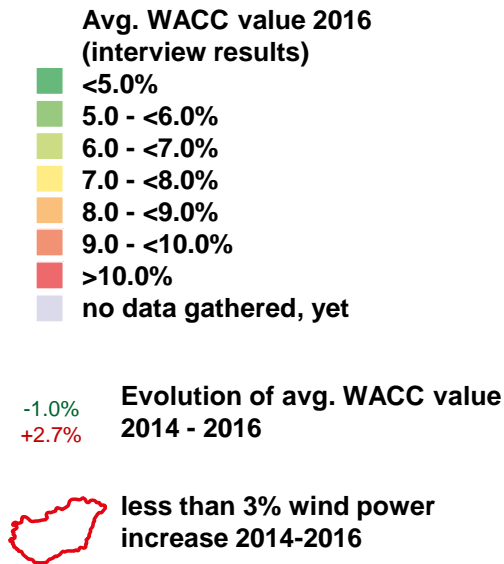
Agora 2015

Impact of costs of capital on RES costs in a system dynamic approach



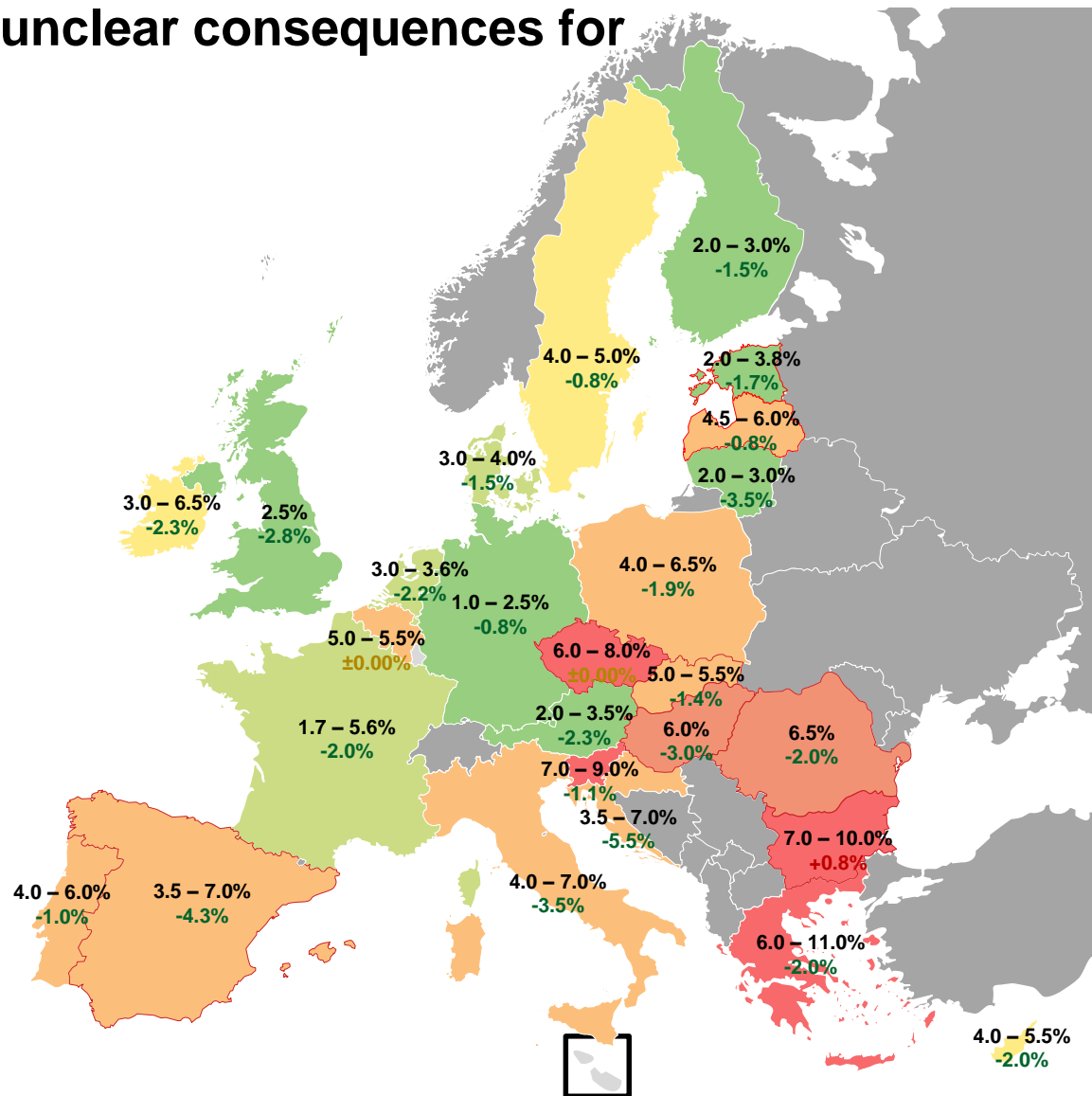
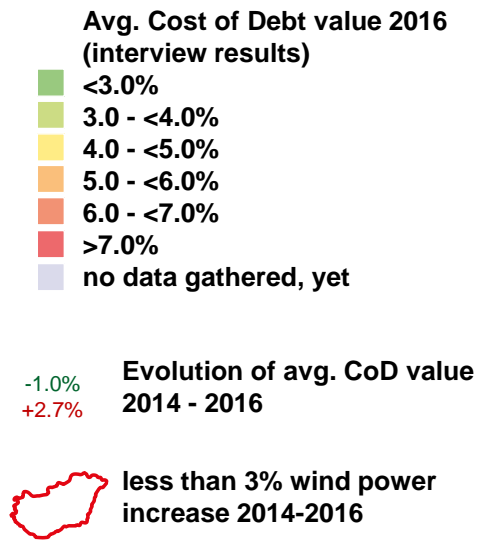
WACC Development

Decrease in most MS, but still no converging WACC



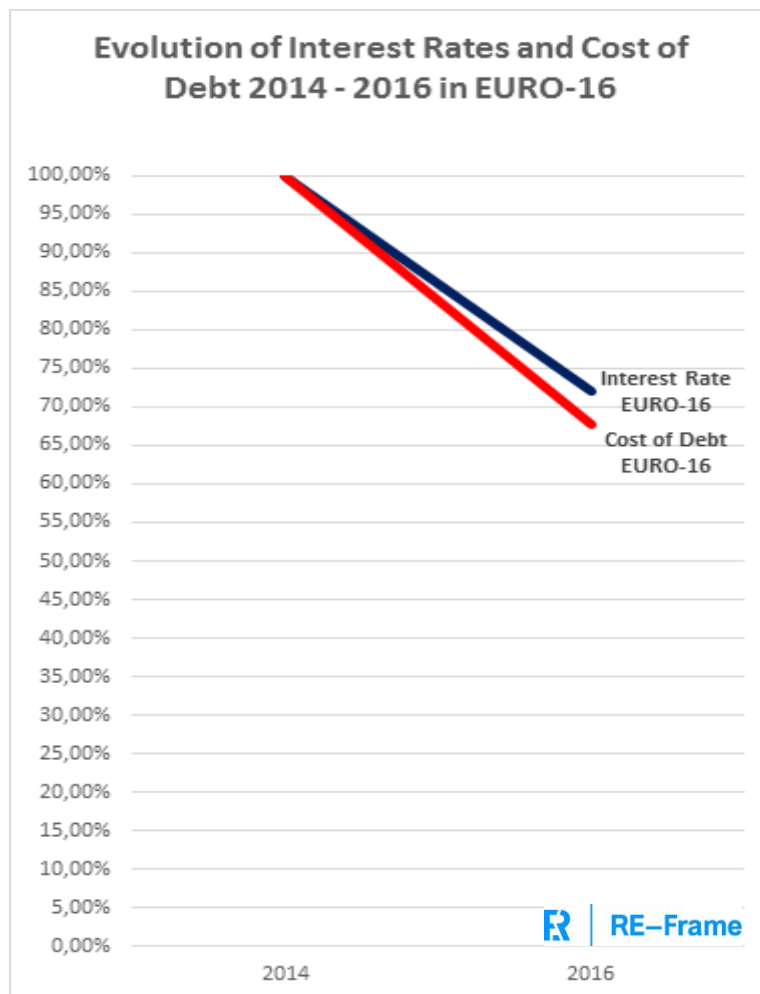
Cost of Debt Development

Plunging interest rates – but unclear consequences for market actors



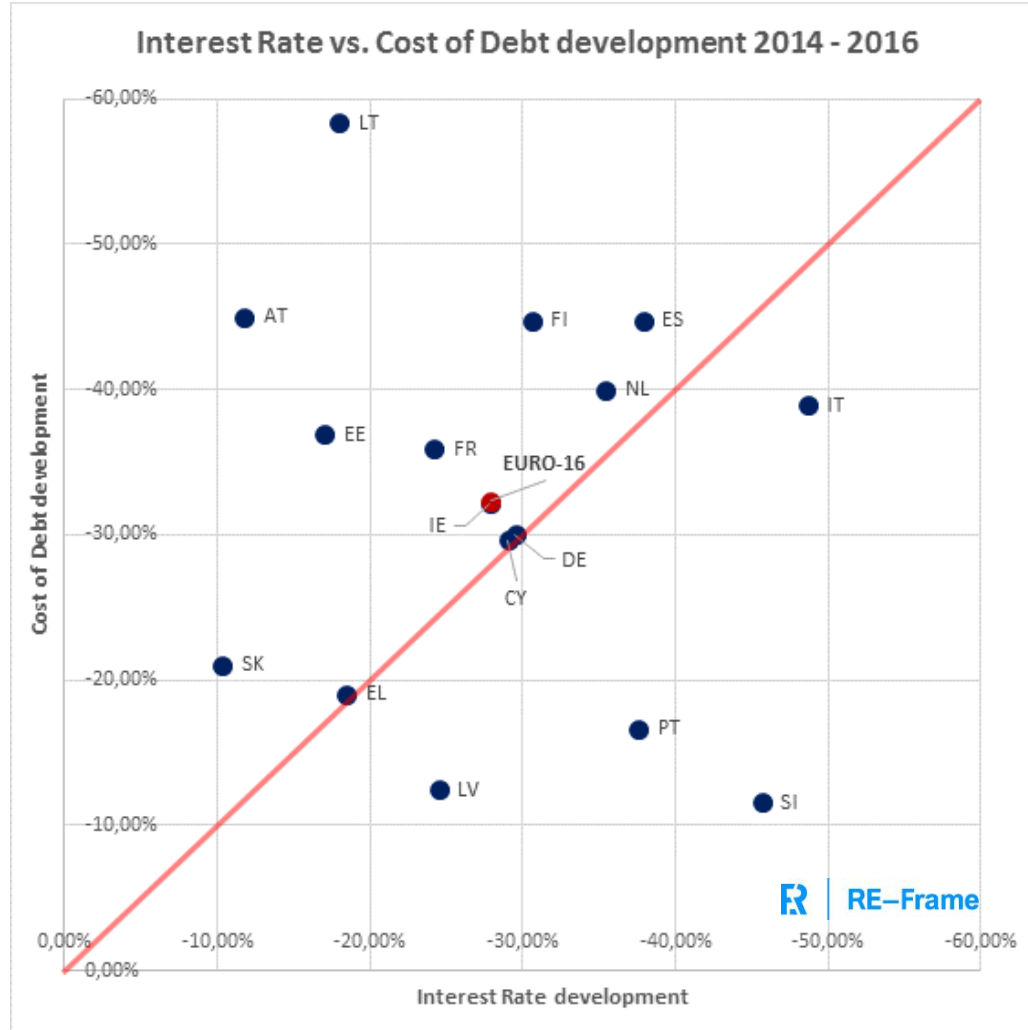
Comparison of Cost of Debt & interest rate development

Trend indicates correlation between cost of debt & interest rates...



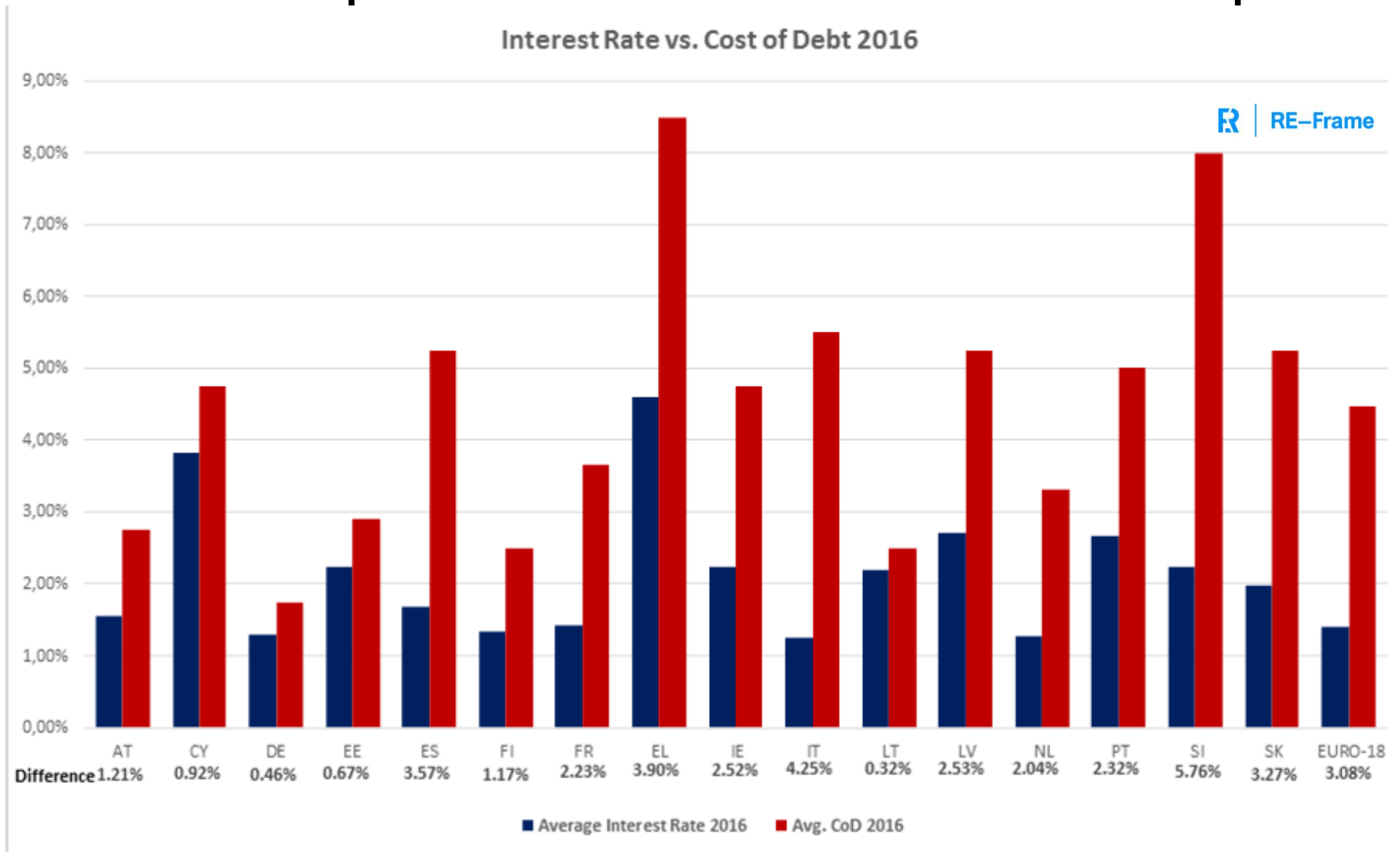
Comparison of Cost of Debt & interest rate development

...but the development at EU Member State level is extremely diverse



Comparison of Cost of Debt & interest rate development

Differences in comparison to absolute interest rates - and their potential



Conclusions

The Good:

- Decreasing trend for WACC for wind onshore in Europe
- The window of opportunity is open now

The Bad:

- Still no converging markets
- No wind-onshore deployment in some markets despite decreased WACC
- Increasing risks for at least some market actors

The Ugly:

- Relationship between macroeconomic development, policies & WACC development still not entirely clear
- What happens if interest rates increase?



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ideas into energy.

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Methodology

Existing data

- Estimations of **costs of capital of wind onshore-investments** from DIA Core Project
- Comprehensive interview series with financial experts
- Evaluation of development of parameters

Analysis

- Comparison with **interest rates for loans from other sectors in EURO zone**
- Description of trends

Results

- Aggregation and visualization of meta data
- Presentation of results and **feedback from national experts**
- Preparation of deliverables: project presentation & database

Before we start: some caveats

- There are **several methods for wind project financing**: corporate financing or project financing
- Ongoing changing interest rates
- Constant changes of RES market conditions
- **Lack of current, significant projects in some EU markets**, made sometimes model estimations necessary
- Different level of transparency of market actors

Cost of Equity Development

Decrease in almost all Member States

– change of business models?



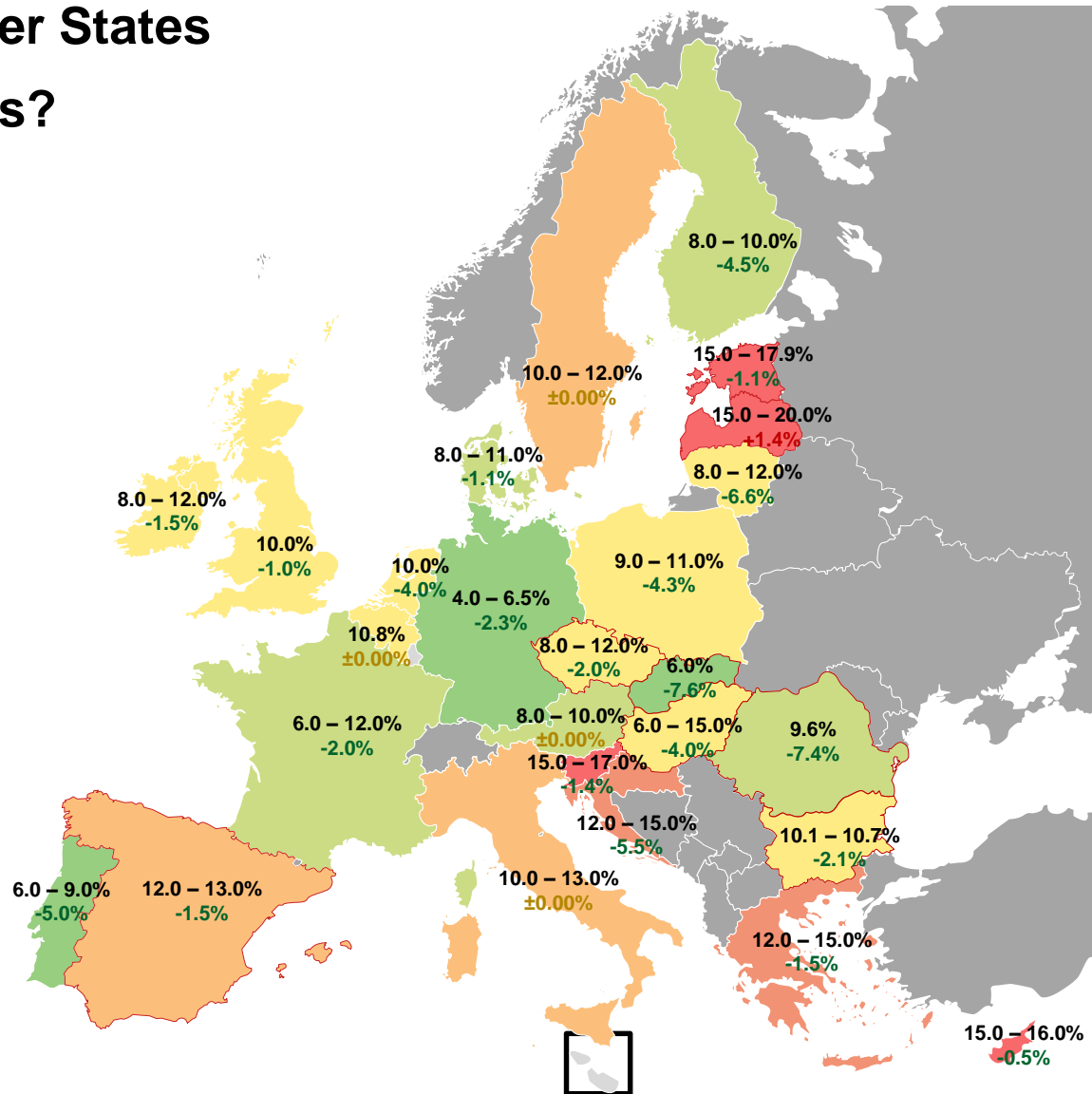
Avg. Cost of Equity value 2016
(interview results)

- <9.0%
- 9.0 - <10.0%
- 10.0 - <11.0%
- 11.0 - <13.0%
- 13.0 - <15.0%
- >15.0%
- no data gathered, yet

Evolution of avg. CoE value
2014 - 2016

-1.0%
+2.7%

 less than 3% wind power
increase 2014-2016



Development of debt/ equity ratio

Diverging ratios reflect opposing factors in MS



Avg. Debt/Equity ratio 2016
(interview results)

- 85/15
- 80/20
- 75/25
- 70/30
- 65/35
- 60/40
- 55/45
- no data gathered, yet

+5/-5 Evolution of avg. Debt/Equity ratio
-5/+5 2014 - 2016

 less than 3% wind power
increase 2014-2016

