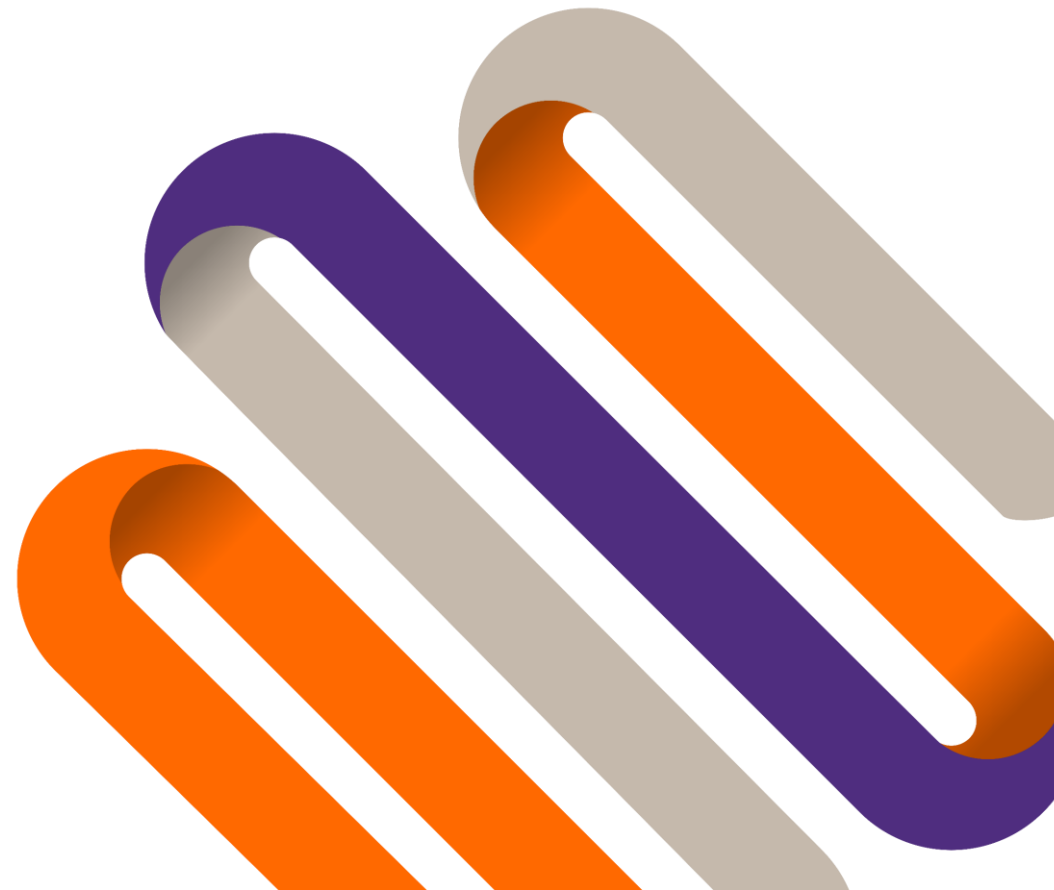


Key considerations when valuing a renewable energy project

Tomas Freyman and Guy Auger

 @tomasfreyman
@GreensolverFr

16 May 2018



When do you think we will have our first subsidy free solar projects in the UK?

A 2018

B 2020

C 2025

D Already have

When do you think we will have our first subsidy free solar projects in the UK?

A 2018

B 2020

C 2025

D Already have

In September 2017, the first solar power farm in the UK to have been built without government subsidies was opened, with the capacity to generate enough power for 2,500 homes. Many others are following.

What additional investment in renewable power would be needed by 2040 in order to keep rising global temperatures below 2 degrees Celsius?

A \$2.4 trillion

B \$5.3 trillion

C \$7.9 trillion

D \$10.2 trillion

What additional investment in renewable power would be needed by 2040 in order to keep rising global temperatures below 2 degrees Celsius?

B \$5.3 trillion

It's already forecast that \$10.2 trillion will be invested in new global power generation in the years to 2040, with renewable power sources accounting for 75% of that. However, an additional \$5.3 trillion investment in renewable power would be needed to keep rising global temperatures below 2 degrees Celsius.

Relatively new asset class



Energy infrastructure

Key valuation considerations

Capital structure



Power prices, PPAs, inflation

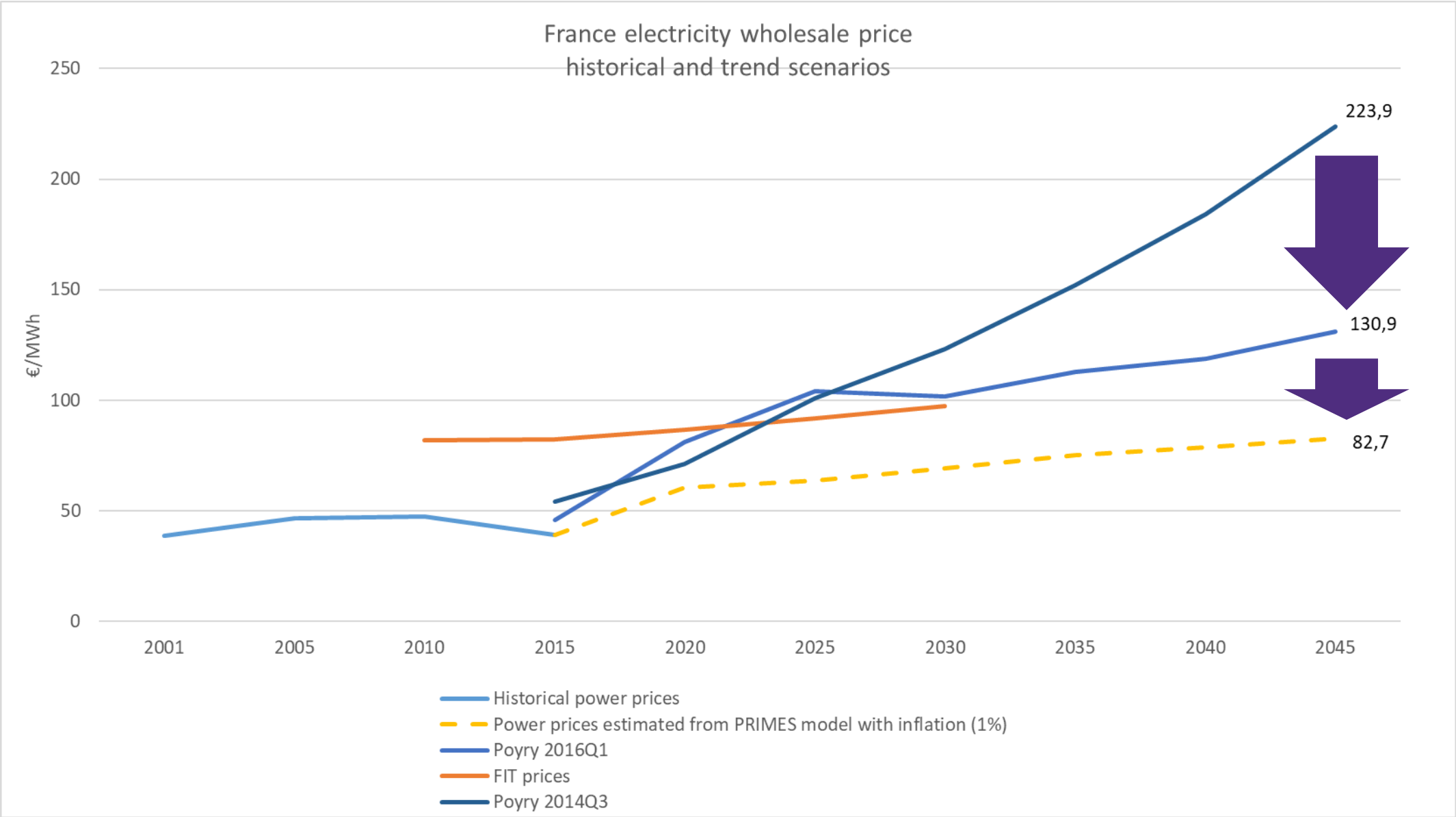


Cost of capital



Technical assumptions

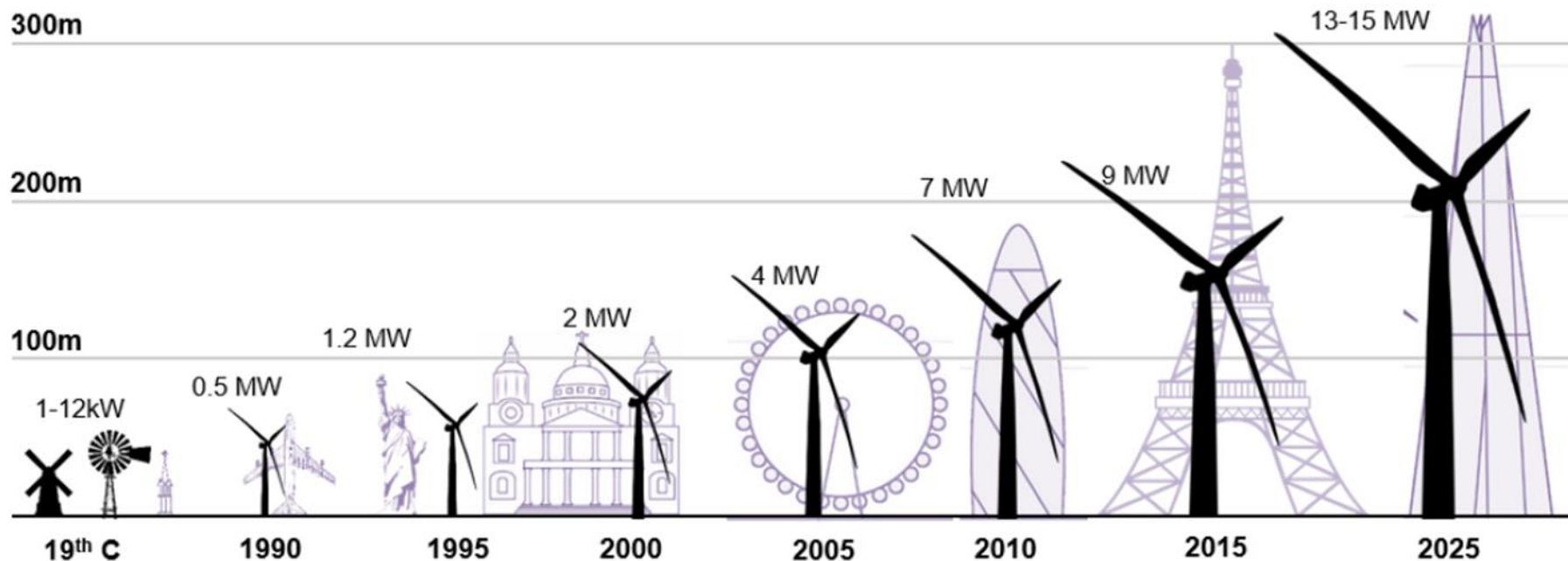
Power price assumptions have a large impact



The underlying asset itself has gone through huge changes

$$\text{POWER IN THE WIND} = (\text{DENSITY OF AIR}) \times (\text{TURBINE BLADE DIAMETER})^2 \times (\text{VELOCITY OF WIND})^3 \times (\text{A CONSTANT})$$

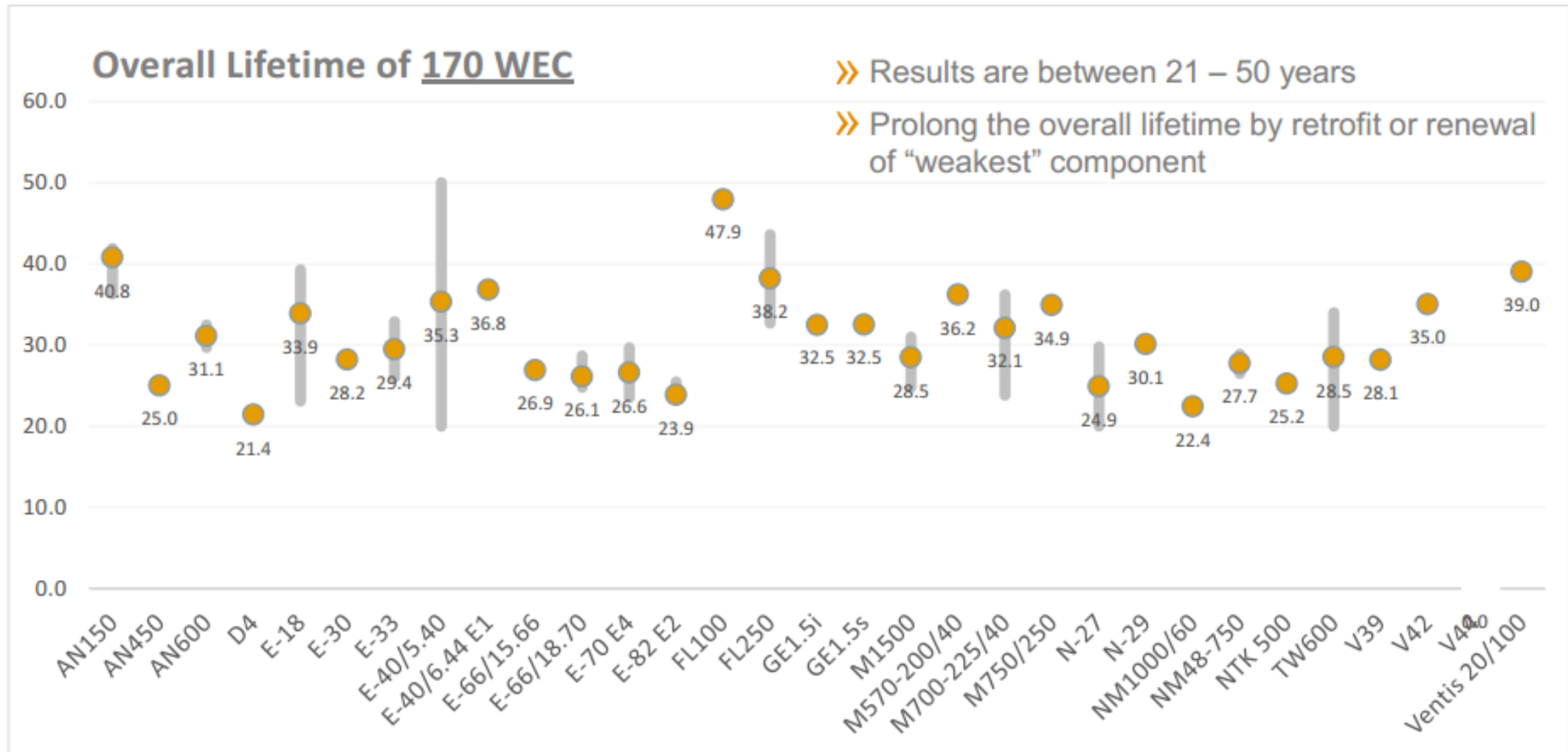
Evolution of wind turbine heights and output



Sources: Various; Bloomberg New Energy Finance

Bloomberg
New Energy Finance

And asset life is often underestimated

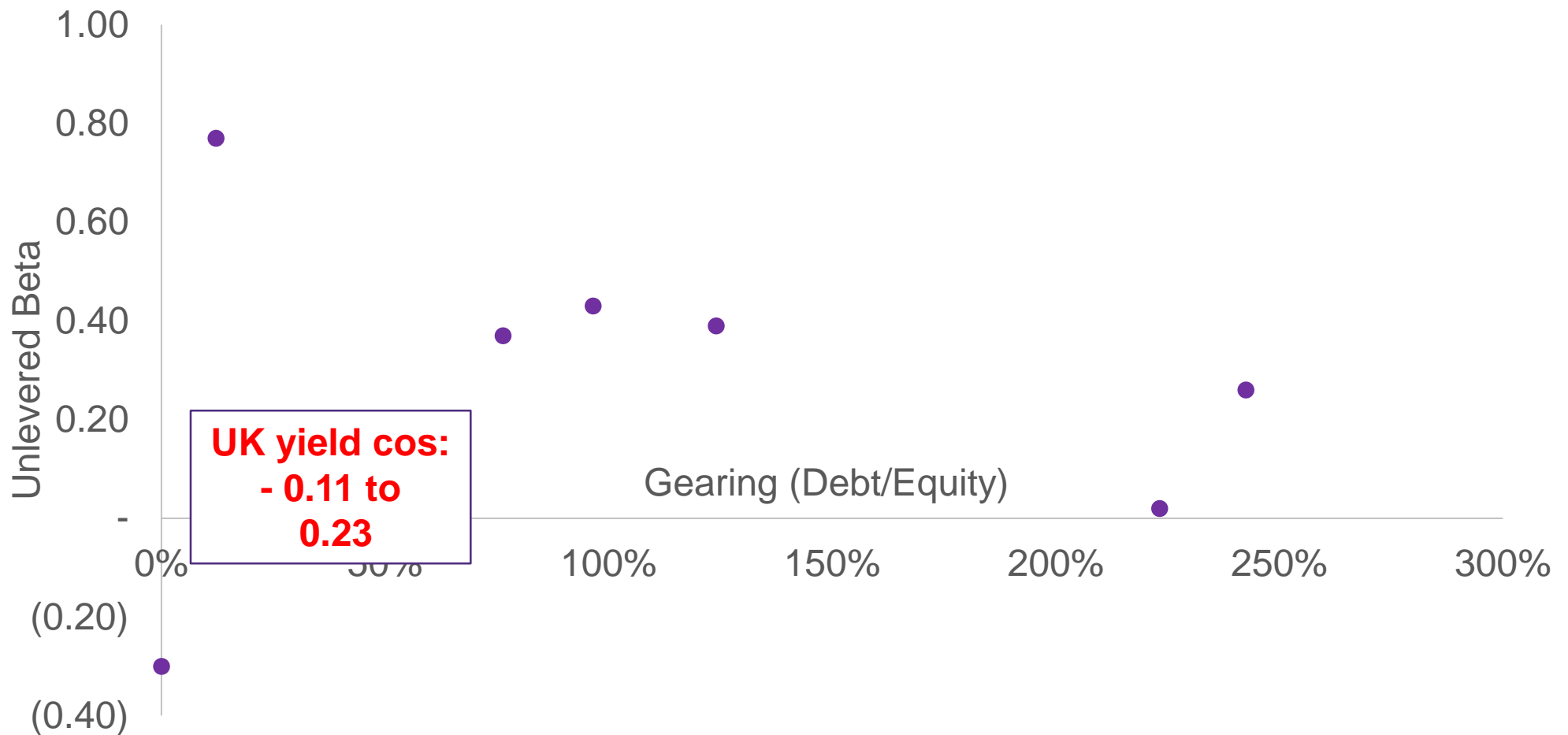


Source: 8.2 Consulting

BETA as driver of cost of capital

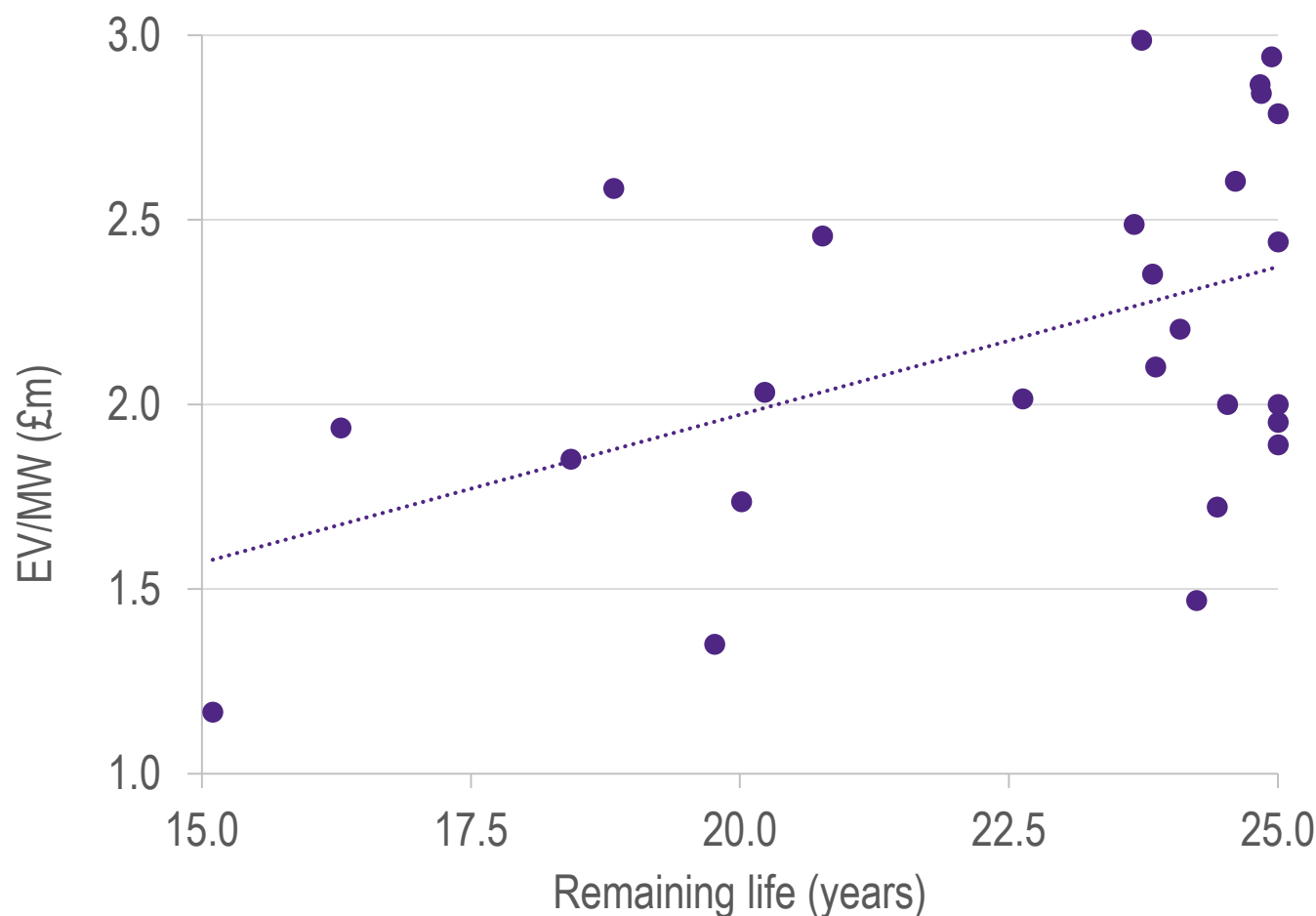
Proceed with caution

Betas for European Infrastructure Companies



EV/MW multiples for value corroboration

Pay close attention to commercial operation date (“COD”)



£EVm/MW
vs.
Remaining Life of
Onshore Wind Projects
in the UK

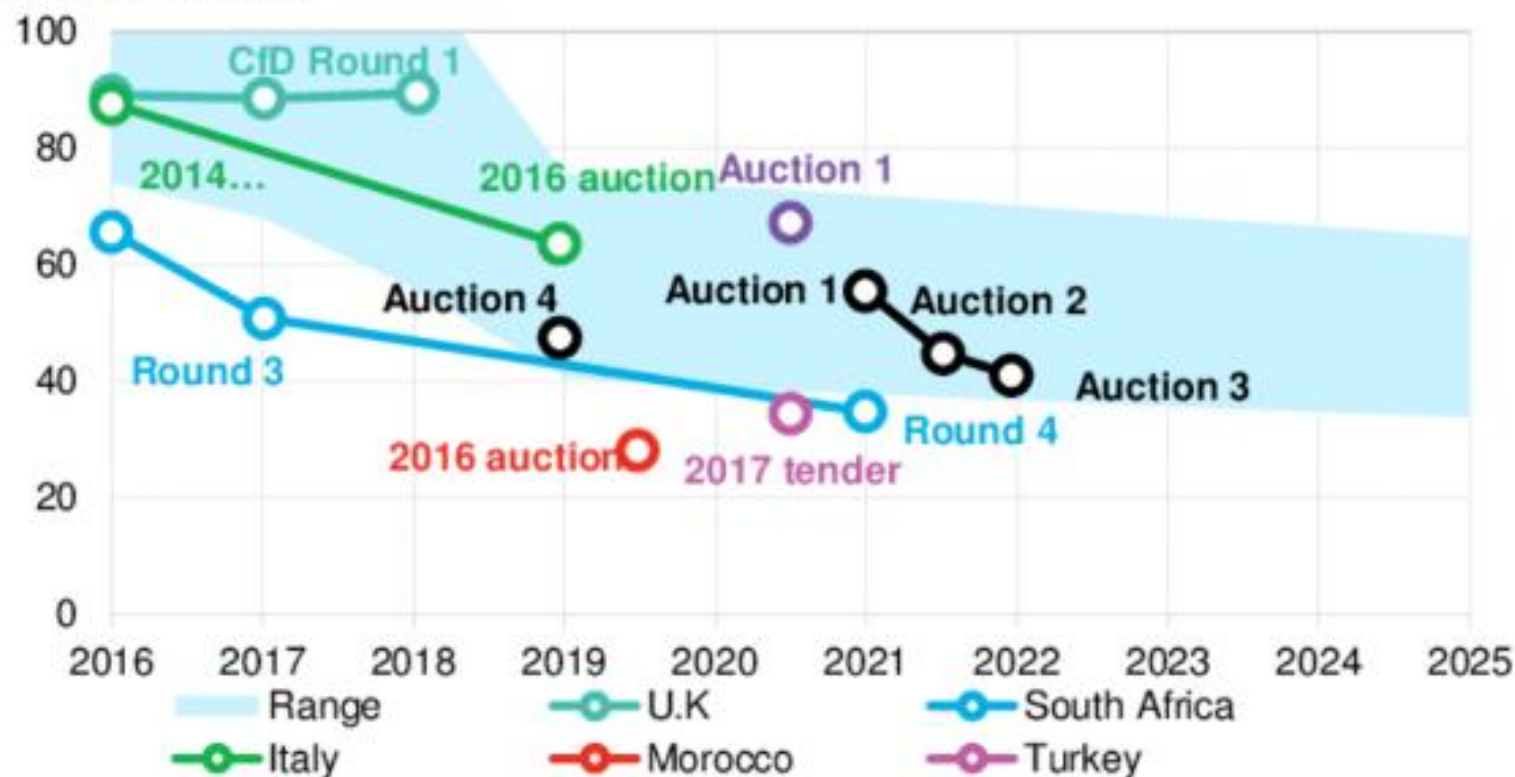
Where are you seeing the market?



Wind auctions drive prices down

1H 2018 LCOE – EMEA onshore wind auction analysis,
levelized wind auction bids vs BNEF LCOE

\$ real 2017/MWh



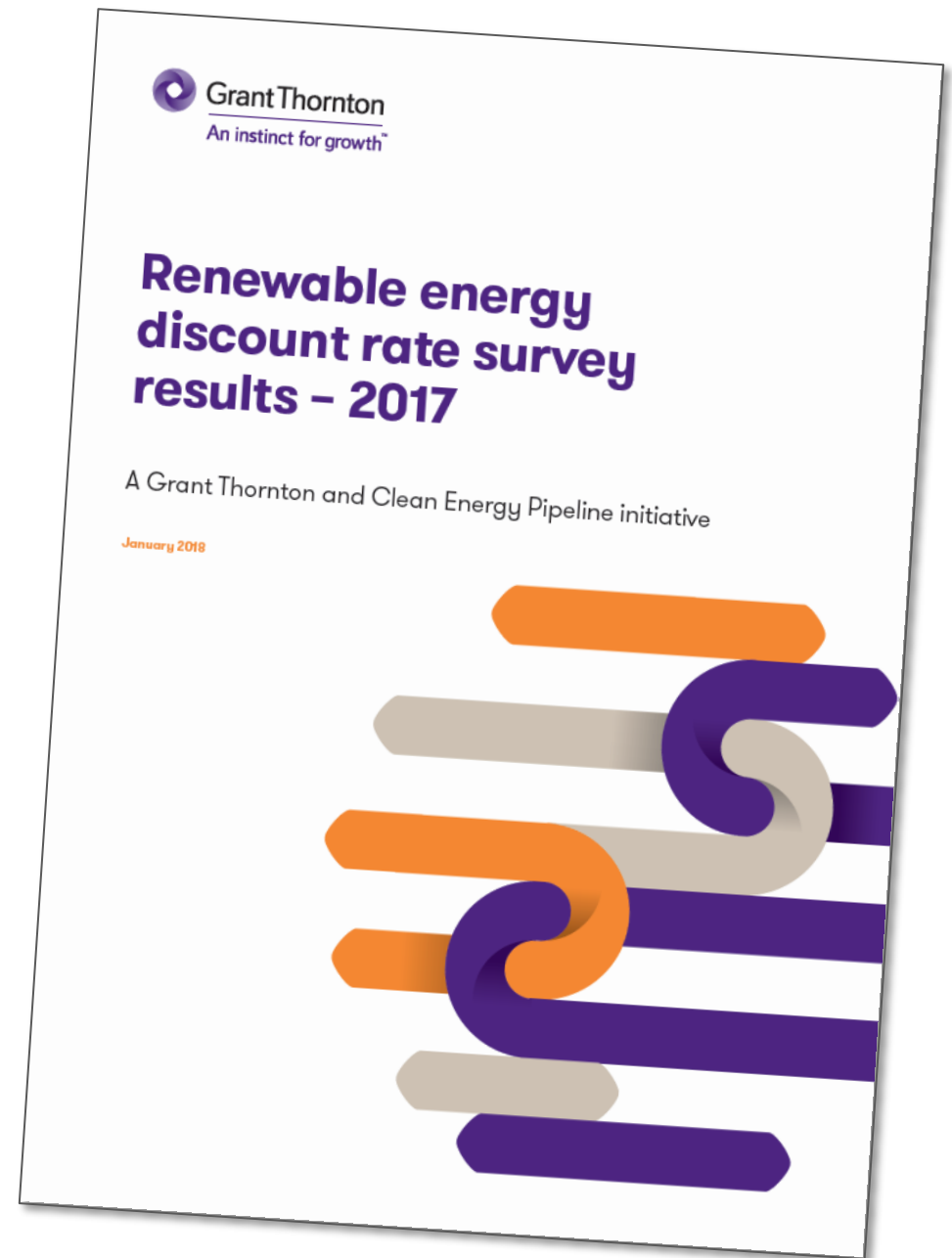
Source: Bloomberg New Energy Finance. Note: Country data in charts show the levelized average winning bid in the auction. Data reflective of commissioning. The 'low' LCOE case here is represented by Sweden low scenario LCOEs.

Cost of capital is a key driver in valuing projects



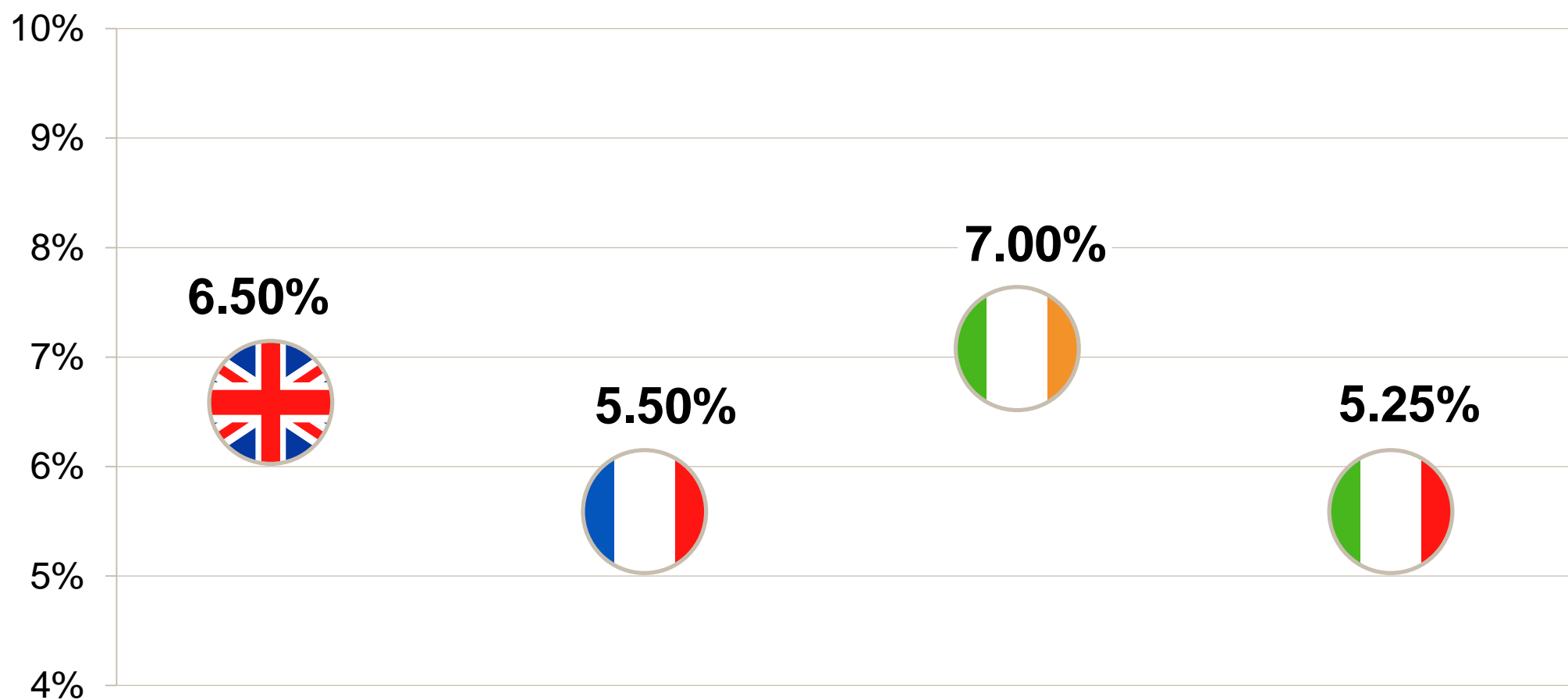
Please access the 2017 report here:

<https://www.grantthornton.co.uk/globalassets/1.-member-firms/united-kingdom/pdf/documents/renewable-energy-discount-rate-survey-2017.pdf>



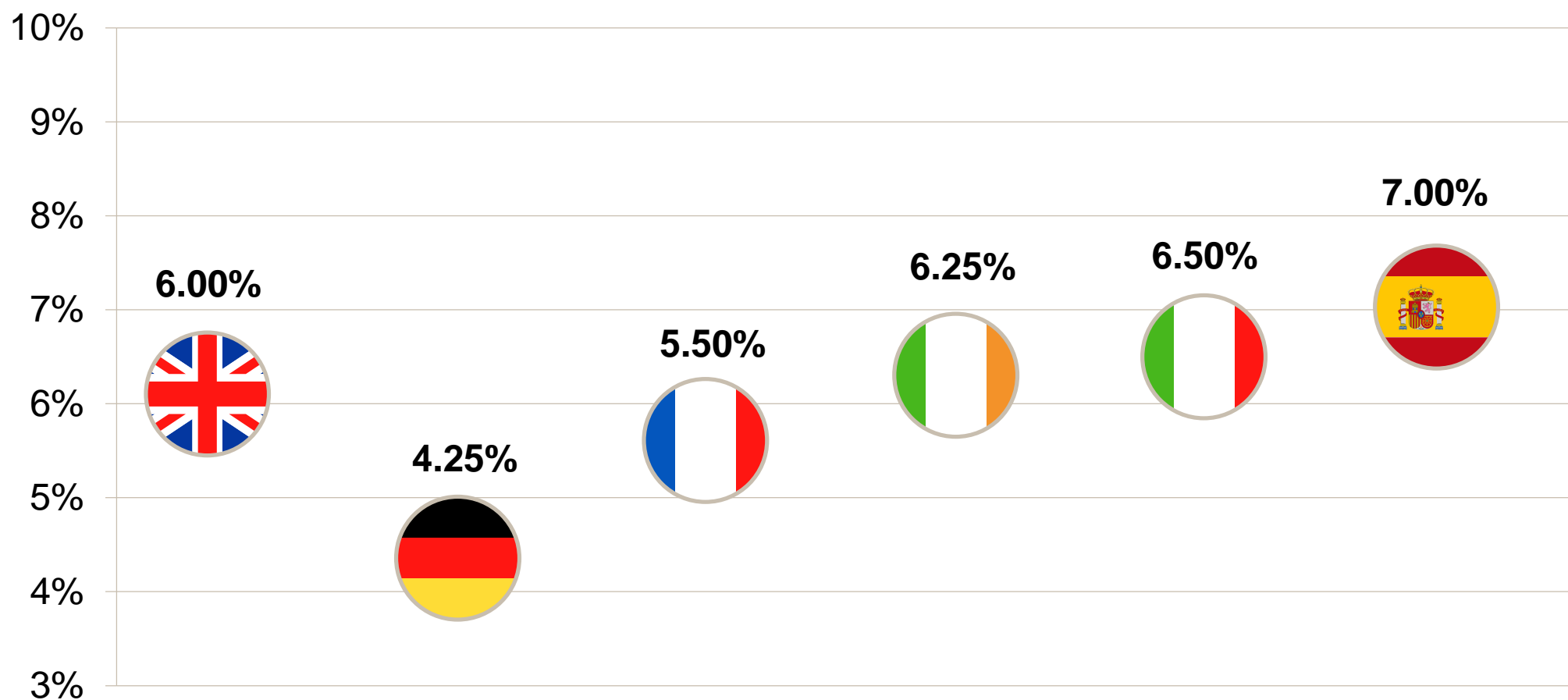
Hydro energy

Unlevered cost of capital



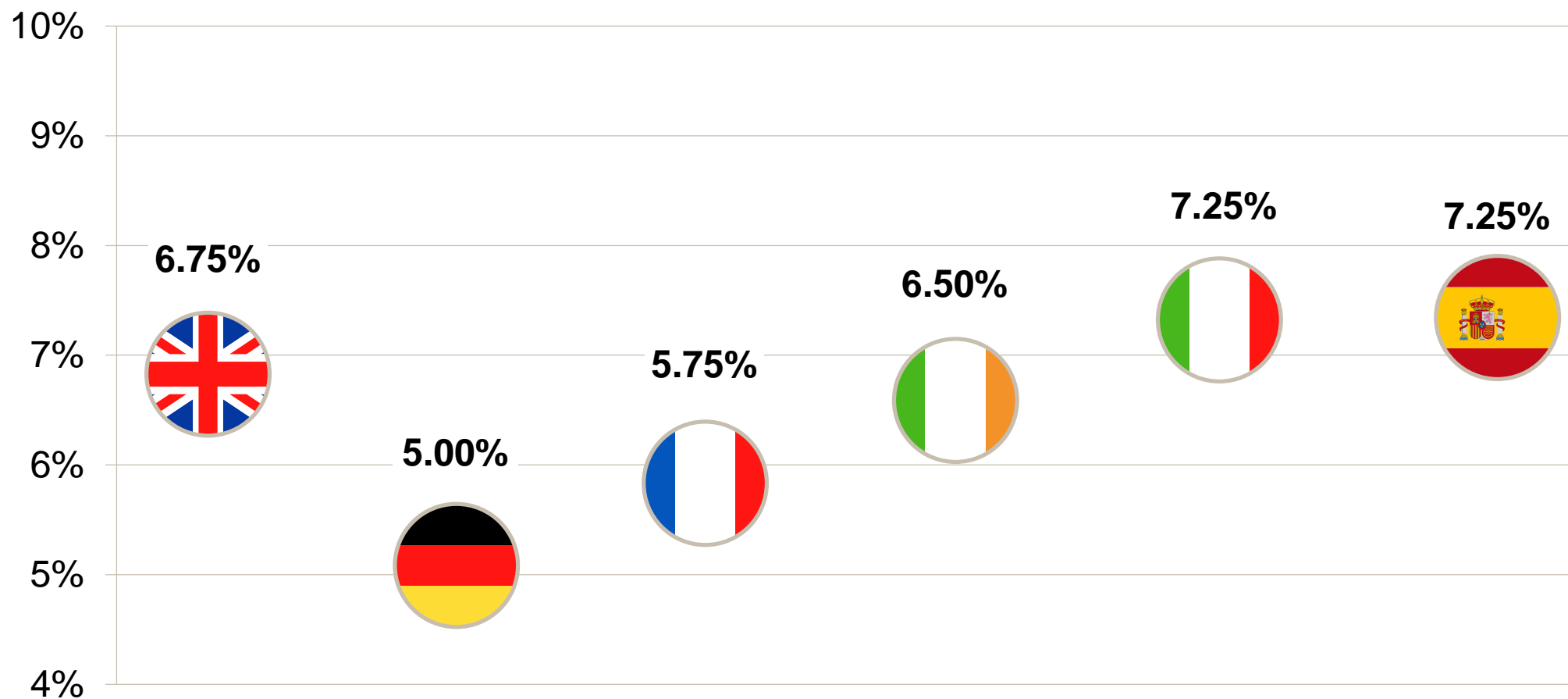
Ground mount solar PV

Unlevered cost of capital



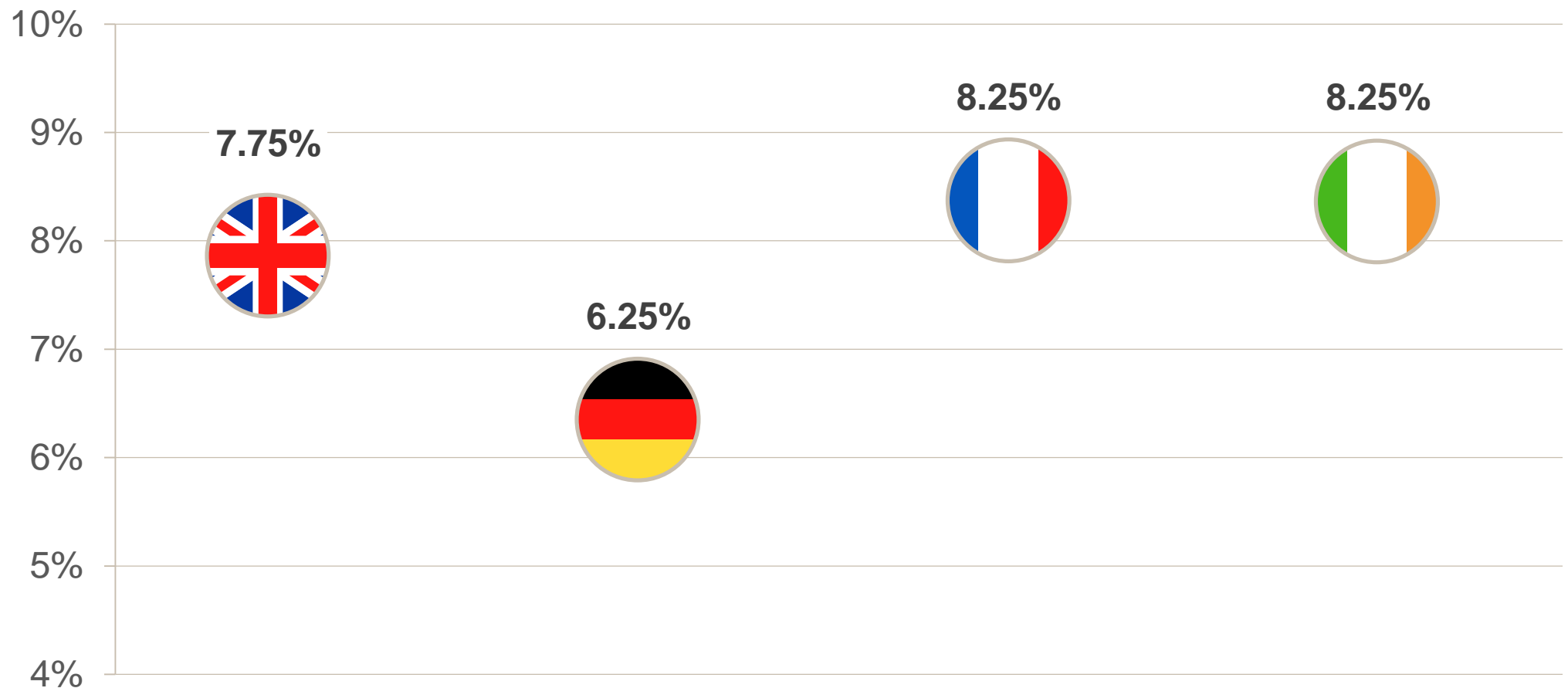
Onshore wind

Unlevered cost of capital



Offshore wind

Unlevered cost of capital



Questions?

Contact details

Tomas Freyman

Valuations Partner

Grant Thornton UK LLP

T +44 (0) 20 7184 4336

E tomas.freyman@uk.gt.com

Twitter [@tomasfreyman](https://twitter.com/tomasfreyman)

Guy Auger

CEO

Greensolver

T +33 1 80 87 85 60

E guy.auger@greensolver.net

Twitter [@GreensolverFr](https://twitter.com/GreensolverFr)

