



PPA STRATEGIES FOR EXISTING PORTFOLIOS

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29 January 2019



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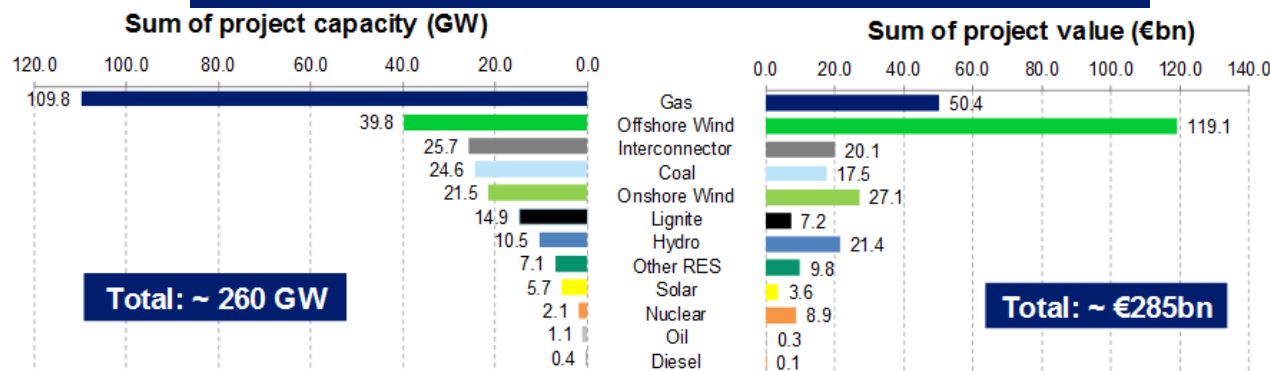


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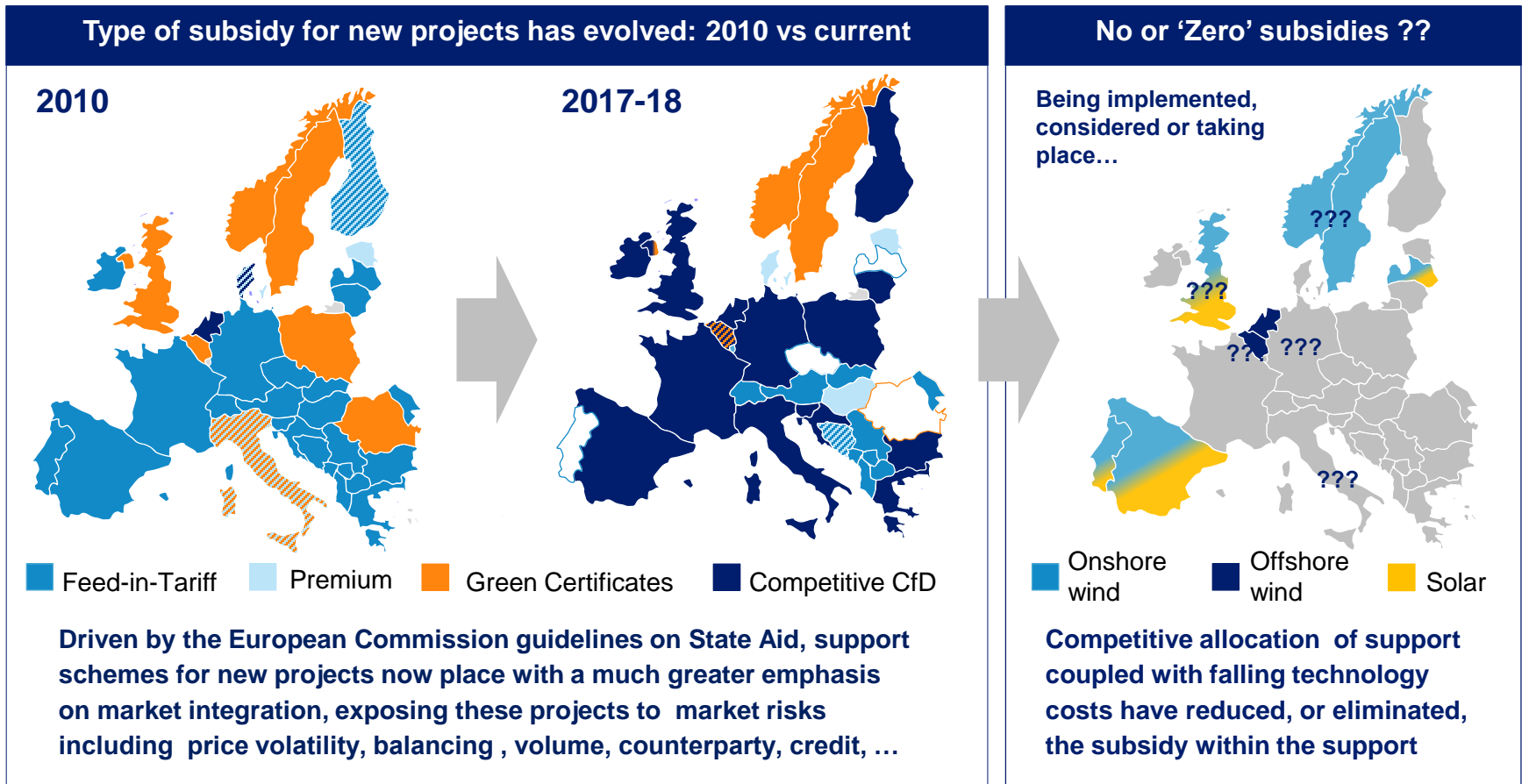
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PROJECTS ARE INCREASINGLY EXPOSED TO MARKET PRICES

Under new Contract-for-Difference support structures or once their feed-in tariffs expire operational projects must now participate in wholesale electricity markets

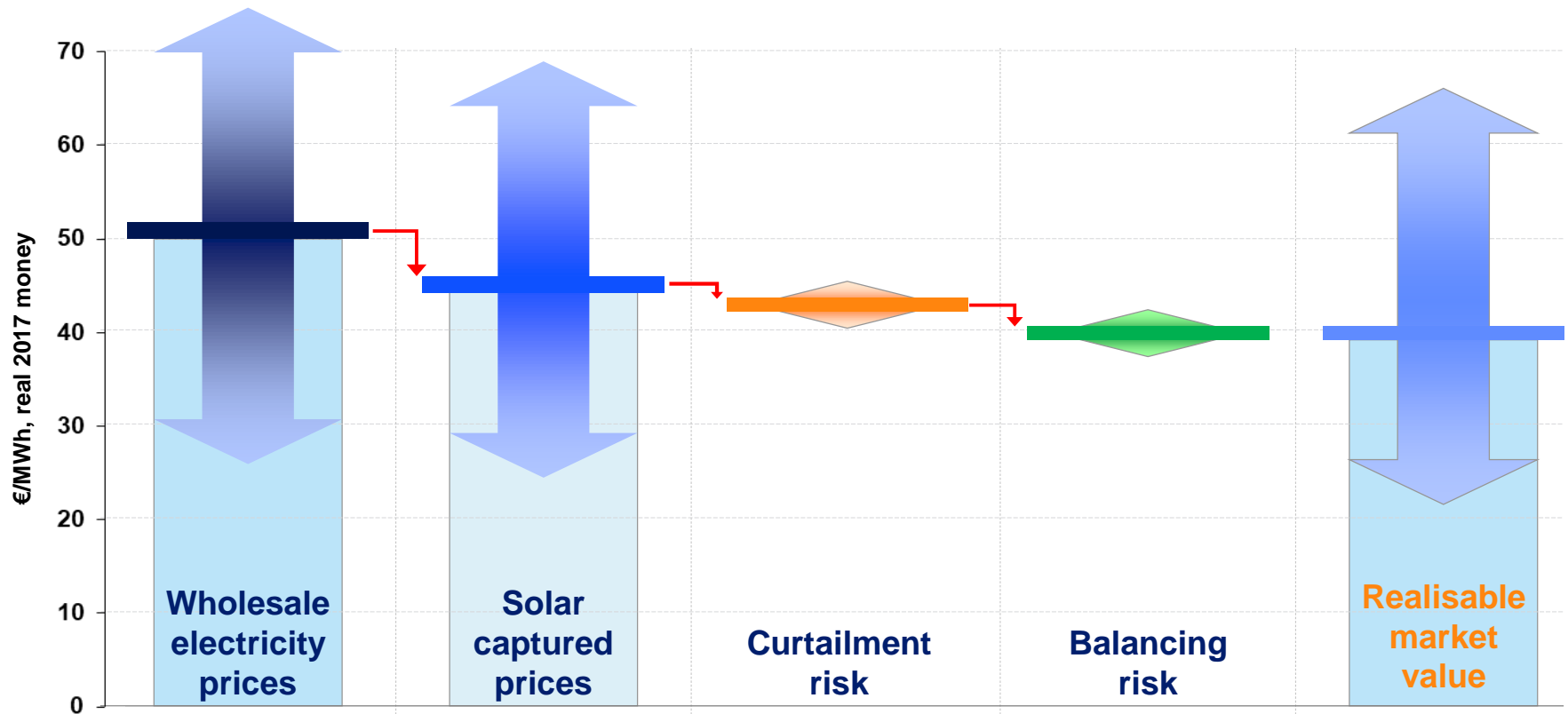


PPAs are the conventional route by which generators manage these market risks

MARKET PRICE RISK COMPRISES AN NUMBER OF FACTORS

Whilst market price volatility due largely to commodity and carbon prices remain the greatest uncertainty, solar capture rates are also a significant risk

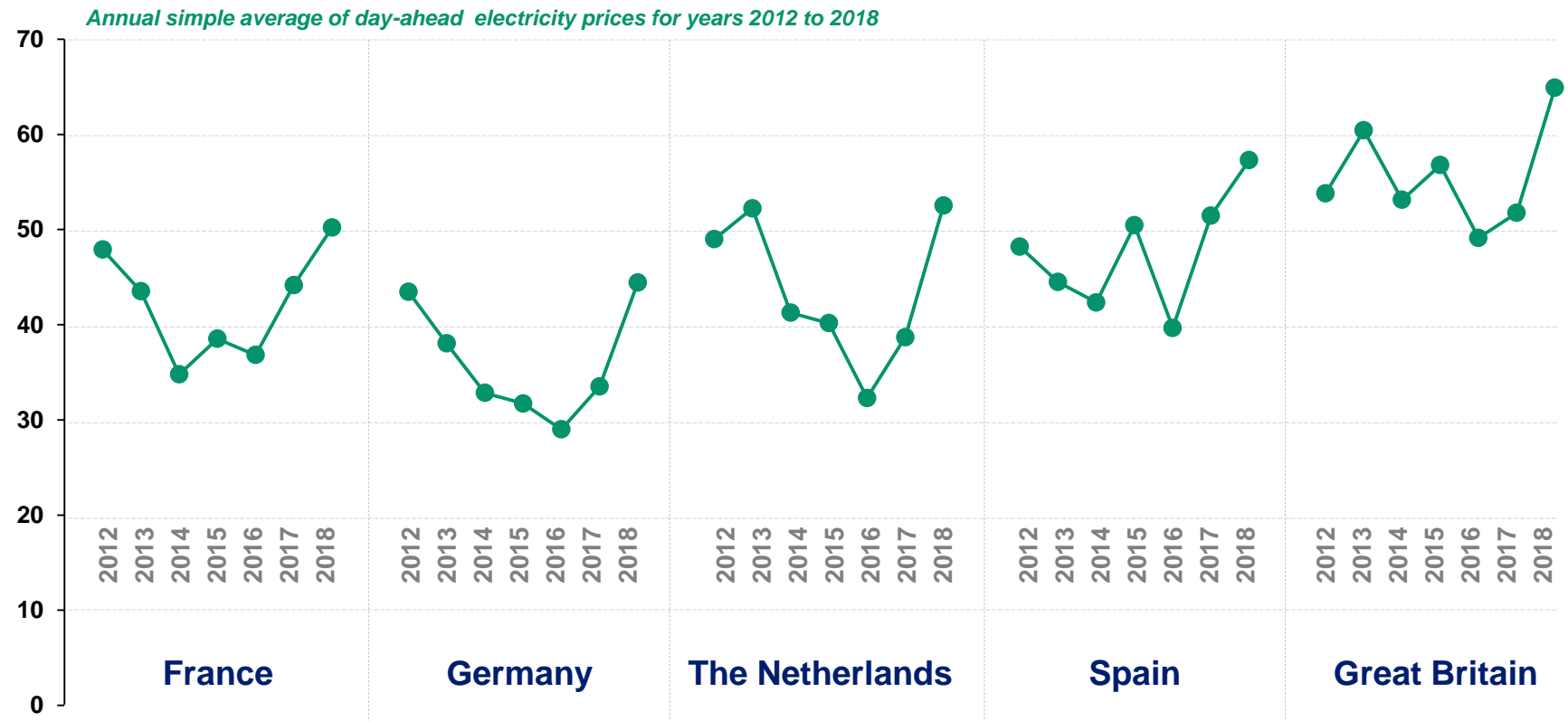
Average and range to Western European electricity prices and risks over next 20 years



WHOLESALE ELECTRICITY PRICES ARE VOLATILE

A quick look at recent history illustrates that exposure to market prices creates significant cashflow uncertainty – that most utility PPAs do not hedge against

Annual average wholesale electricity prices (€/MWh, real 2017 money)



ROUTE TO MARKET OPTIONS TO HEDGE PRICE RISKS

PPA type	Key features	Extent of hedge against price risks				
		Wholesale prices	Capture rates	Curtailment	Balancing risk	Value
Traditional Utility PPA	<ul style="list-style-type: none"> Long term structure Proportion of quoted market index Offtaker takes balancing risk Curtailment subject to terms 					
Rolling fixed price contracts	<ul style="list-style-type: none"> An add-on to utility PPA or separate financial hedge, fixing prices for 6 months to 3 years by agreement Generator retains long term price exposure 					
Corporate PPA with fixed price	<ul style="list-style-type: none"> Fixed (or inflation-linked) price for medium to long-term Generally sleeved through utility Revenue certainty but no upside 					
Private-wire sale to customer	<ul style="list-style-type: none"> Option to sell at premium value of avoided retail price, but retaining price volatility Exposure to balancing costs 					
On-site sale to customer	<ul style="list-style-type: none"> Option to sell at premium value of avoided retail price, but retaining price volatility May avoid balancing costs 					
Selling direct to wholesale market	<ul style="list-style-type: none"> Trading on own account or via trading service provider. Suits very large experienced portfolios that are not risk averse 					



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