

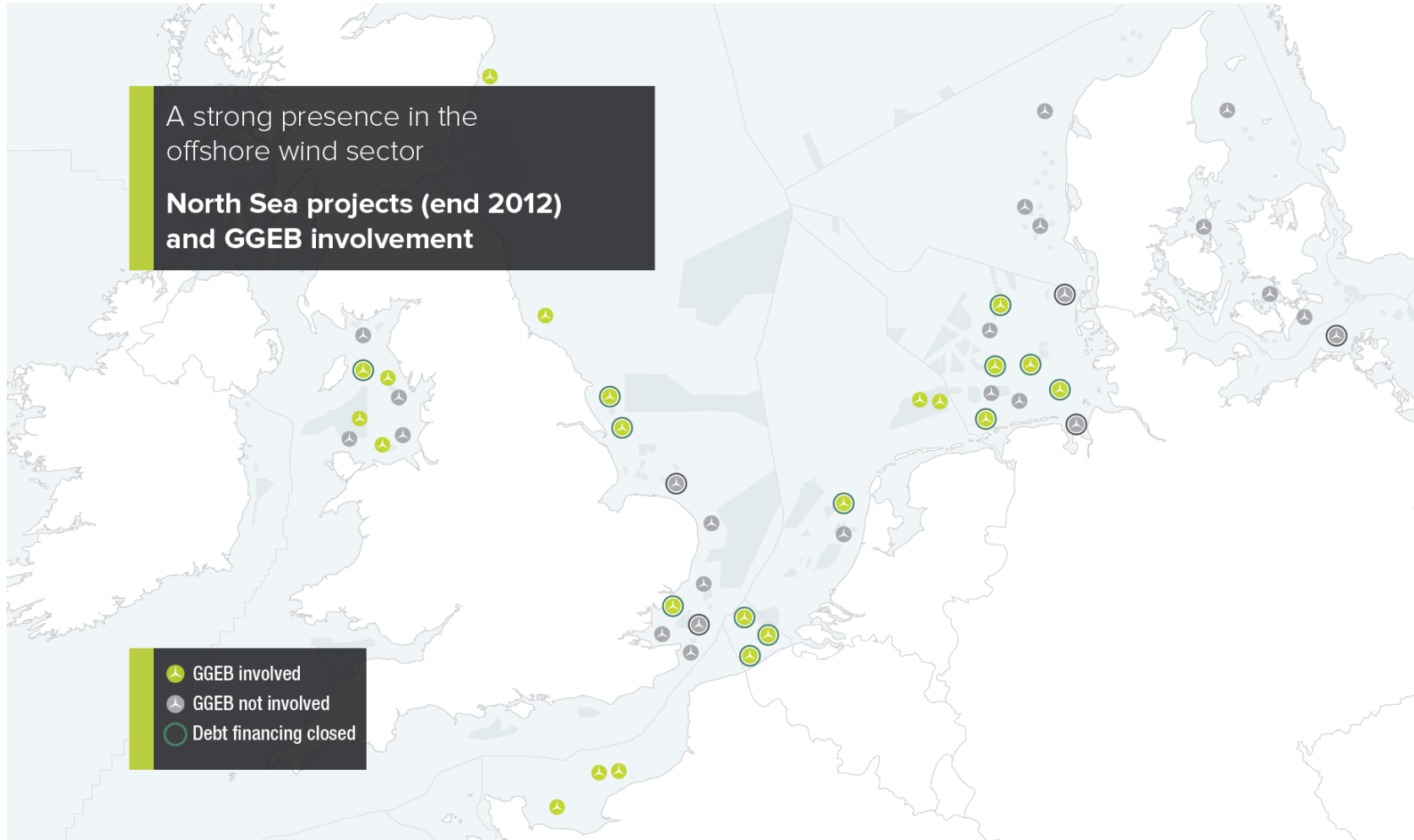
## The value of offshore wind

GL Offshore wind conference – Hamburg, 2 April 2014

Dr. Jérôme Guillet

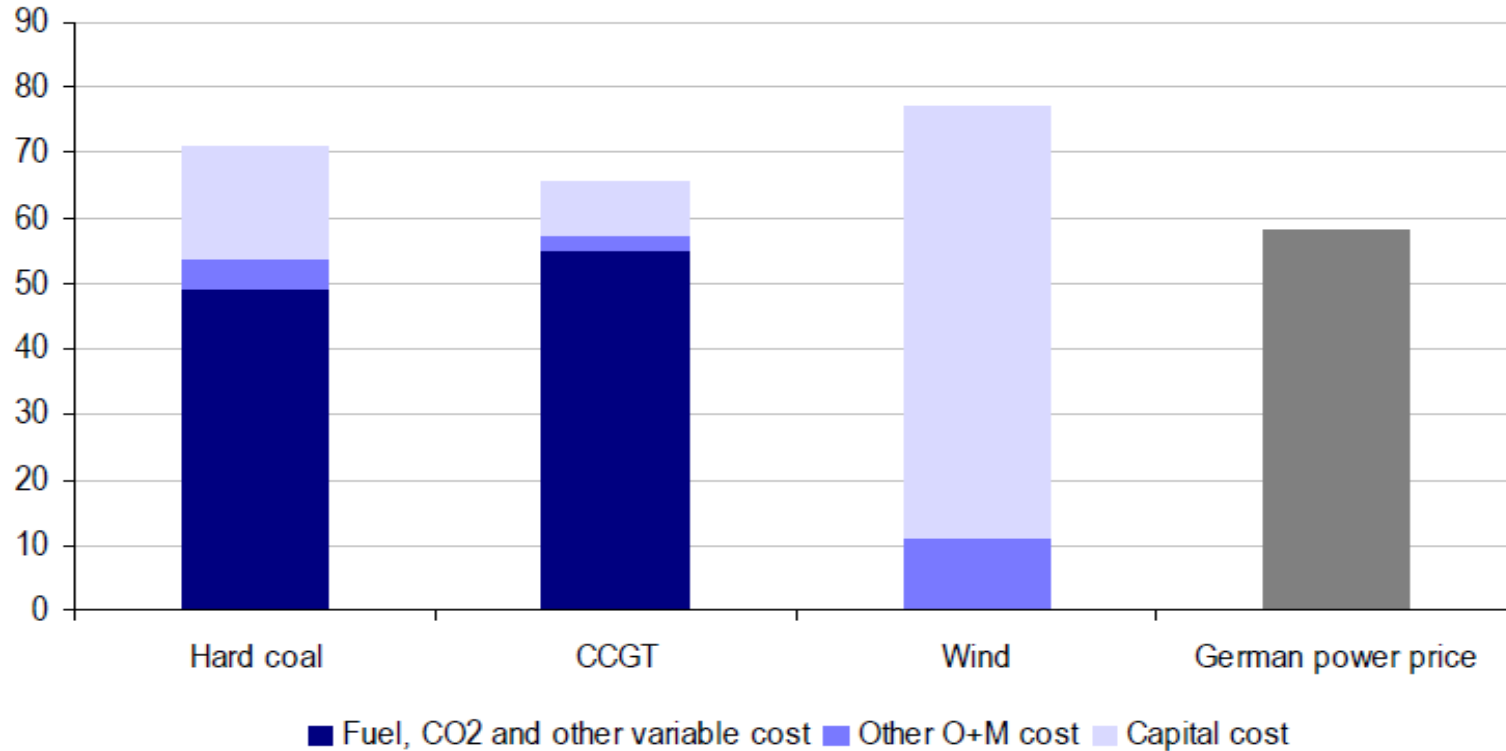


# GGEB – the offshore wind finance specialists



## The known cost of money vs the expected price of gas

Source: UBS



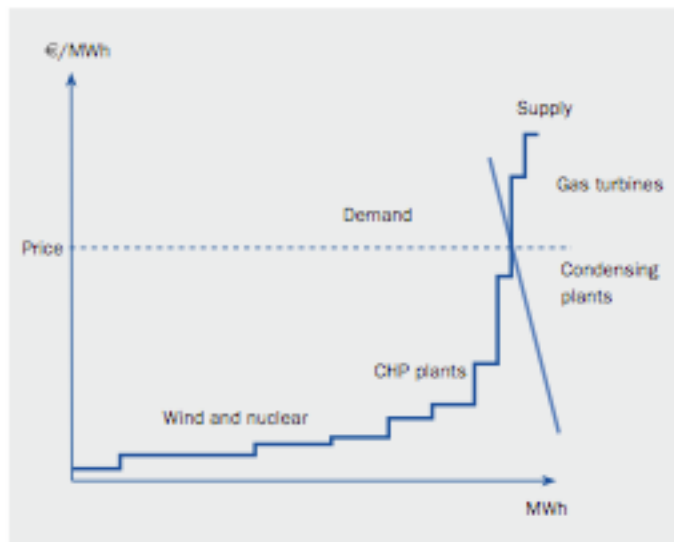
- The cost of wind power is driven by the cost of money today and is known with certainty
- The cost of gas-fired power is linked to the price of gas – its cost in the future is estimated, not known

**Wind power can provide a long term cap on power prices**

## Wind power actually brings prices down : the importance of marginal cost

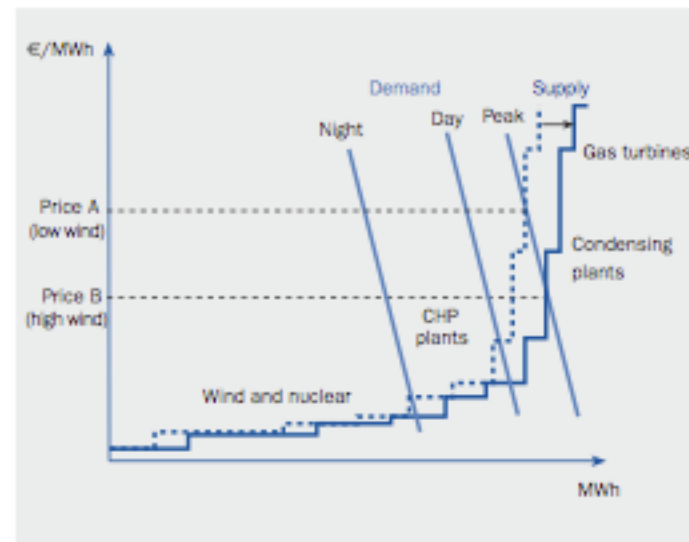
Source: EWEA

FIGURE 0.10: Supply and Demand Curve for the NordPool Power Exchange



Source: Risø DTU

FIGURE 0.11: How wind power influences the power spot price at different times of day



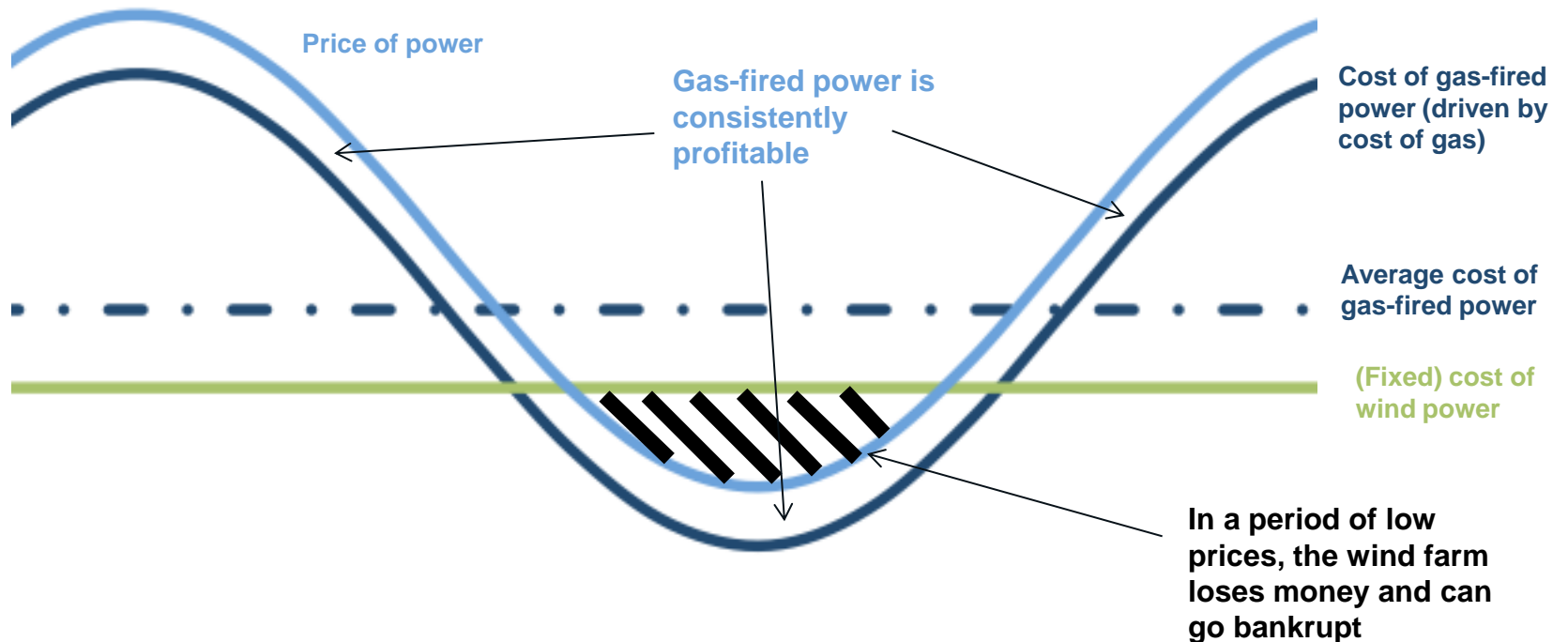
Source: Risø DTU

Source: *Economics of wind (pdf)* by the European Wind Energy Association

- The price of electricity on the market is set by the marginal cost, ie the most expensive producer required at any time
- Wind has a marginal cost close to zero and displaces more expensive generators when it is available

## Power sector economics – cheap and profitable are not the same thing

Markets do not rank average costs, but marginal costs

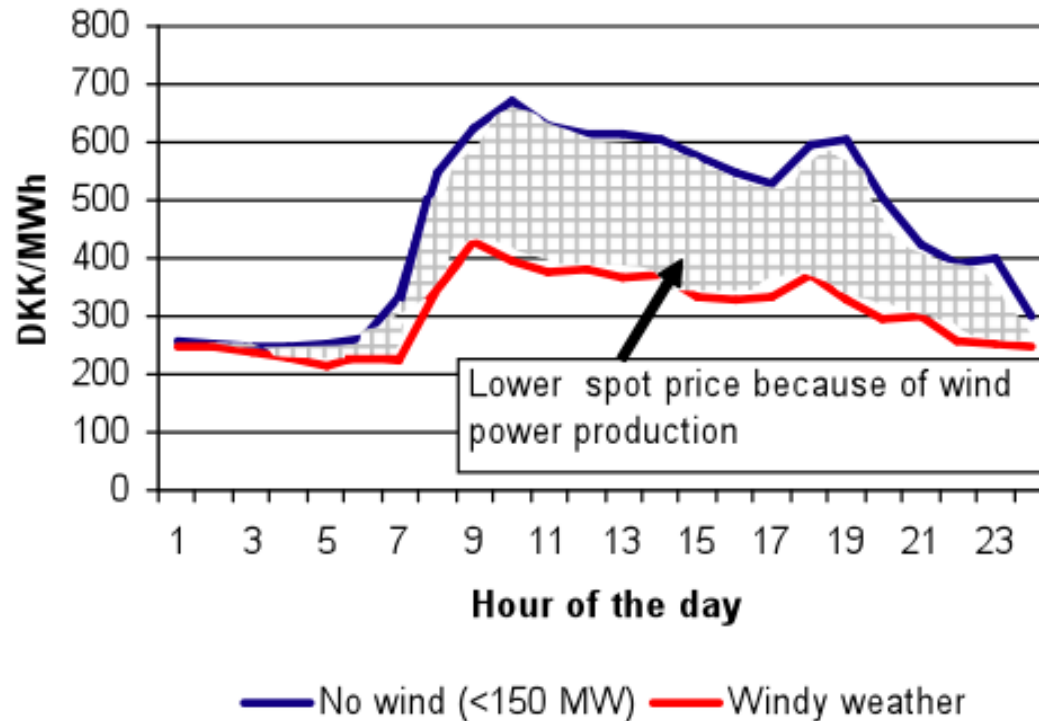


- Generation sources with fixed costs need to be cheaper than the *lowest* power price, not the average power price
- Otherwise, they can go bankrupt quickly, which makes the asset unattractive to investors

**Regulation is thus needed to make investment in cheaper technology possible**

## Wind brings prices down – the “merit order effect”

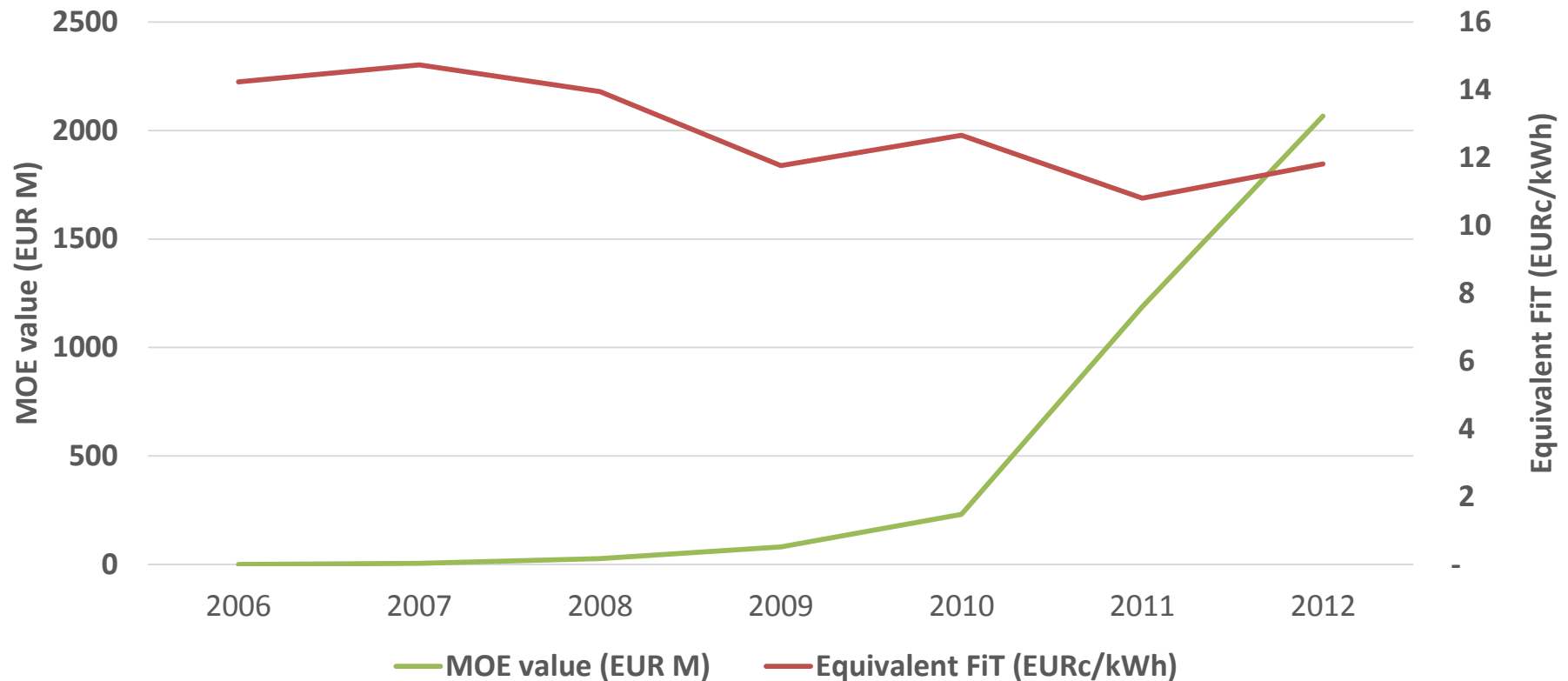
Source: The effect of wind power on spot market prices, Rune Moesgaard , Poul Erik Morthorst, EWEC 2008



- Wind, when available, brings spot prices down – the effect is strongest at peak times
- The profile of offshore wind matches the profile of demand quite well, thus ensuring a strong suppression effect

## The price suppression effect is increasingly valuable

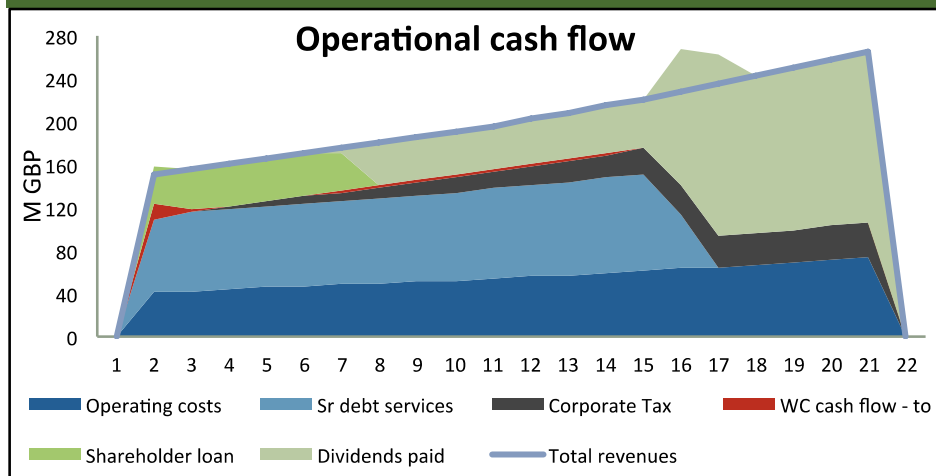
The case of solar in Italy (GGEB study, EU PVSEC conference, Paris, November 2013)



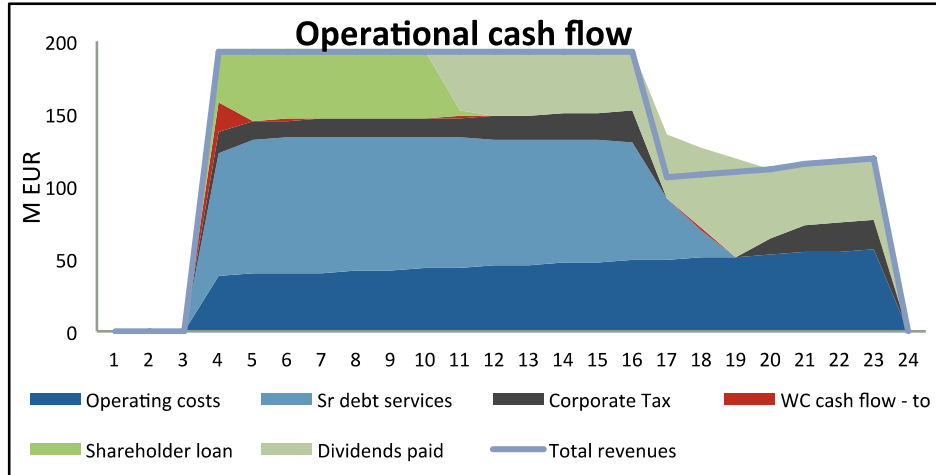
- The merit order effect is worth close to 15c/KWh produced by renewable energy
- That value is passed on immediately to buyers of electricity, albeit not in a very visible way

# The regulatory framework has a huge impact on the cost of offshore wind

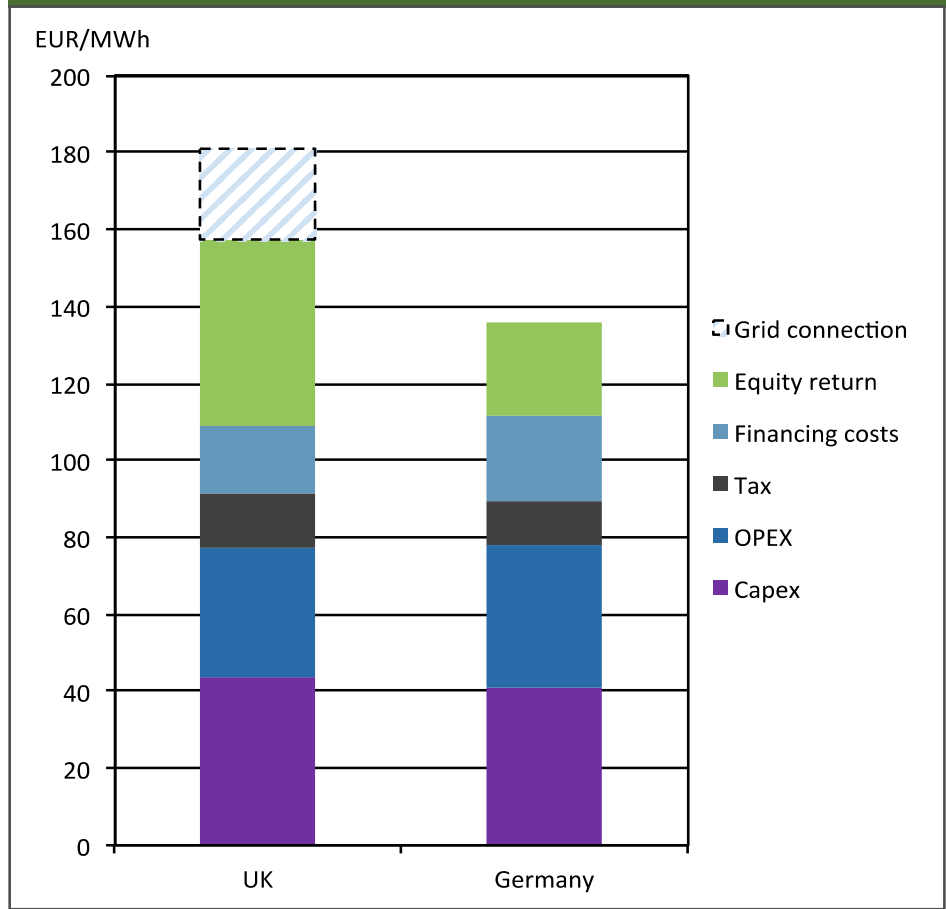
UK – target IRR of 14% - LCOE = 151 GBP/MWh



Germany - target IRR of 10% - LCOE = 136 EUR/MWh



Source: GGEB models



Stability – and simplicity – of the regulatory framework matters as much as its exact content



## The value of offshore wind

GL Offshore wind conference – Hamburg, 2 April 2014

Dr. Jérôme Guillet

