



POWER COMPANIES - DEFENSIVE STOCKS ?

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DEFENSIVE STOCK BY INVESTOPEDIA



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- 1 Defensive Stock
- 2 Defensive Buy
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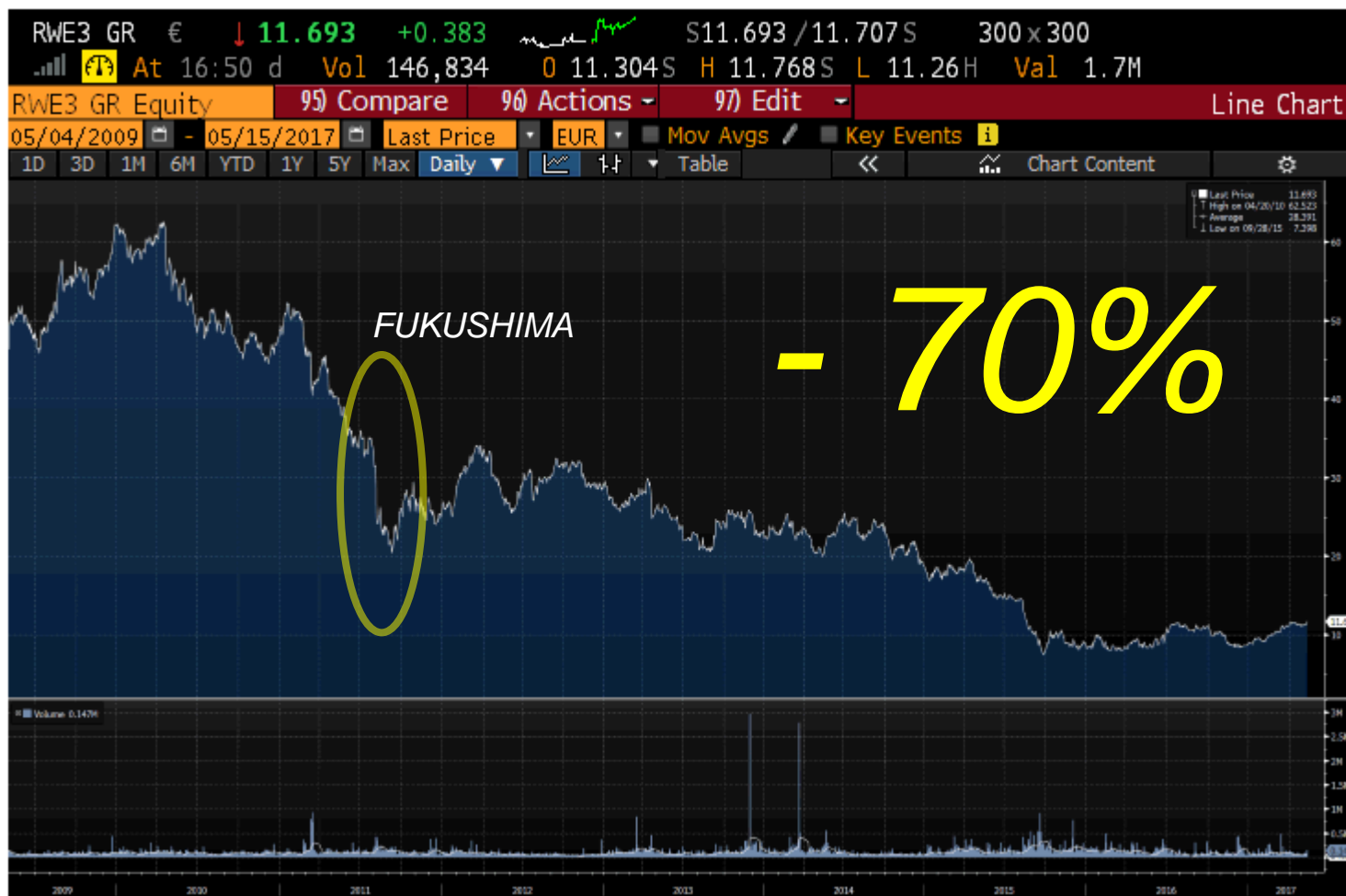
What is a 'Defensive Stock'

A defensive stock is a stock that provides a constant [dividend](#) and stable earnings regardless of the state of the overall [stock market](#). Because of the constant demand for their products, defensive stocks tend to remain stable during the various phases of the [business cycle](#). A defensive stock should not be confused with a "defense stock," which refers to stock in companies that manufacture things like weapons, ammunition and fighter jets.

Examples of Defensive Stocks

[The utility industry](#) is an example of defensive stocks because, during all phases of the business cycle, people need gas and electricity. Investors tend to invest [in defensive stocks](#) if a market downturn is expected. However, if the market is expected to prosper, active investors will often choose [stocks with higher betas](#) in an attempt to maximize return. Defensive stocks are also known as "[non-cyclical stocks](#)" because they are not highly correlated with the business cycle.

YET SINCE 2009 RWE, FOR EXAMPLE, DID NOT
PERFORM VERY WELL.....



NEITHER DID E.ON..... HAVE COMPANIES IN OTHER COUNTRIES PERFORMED BETTER?



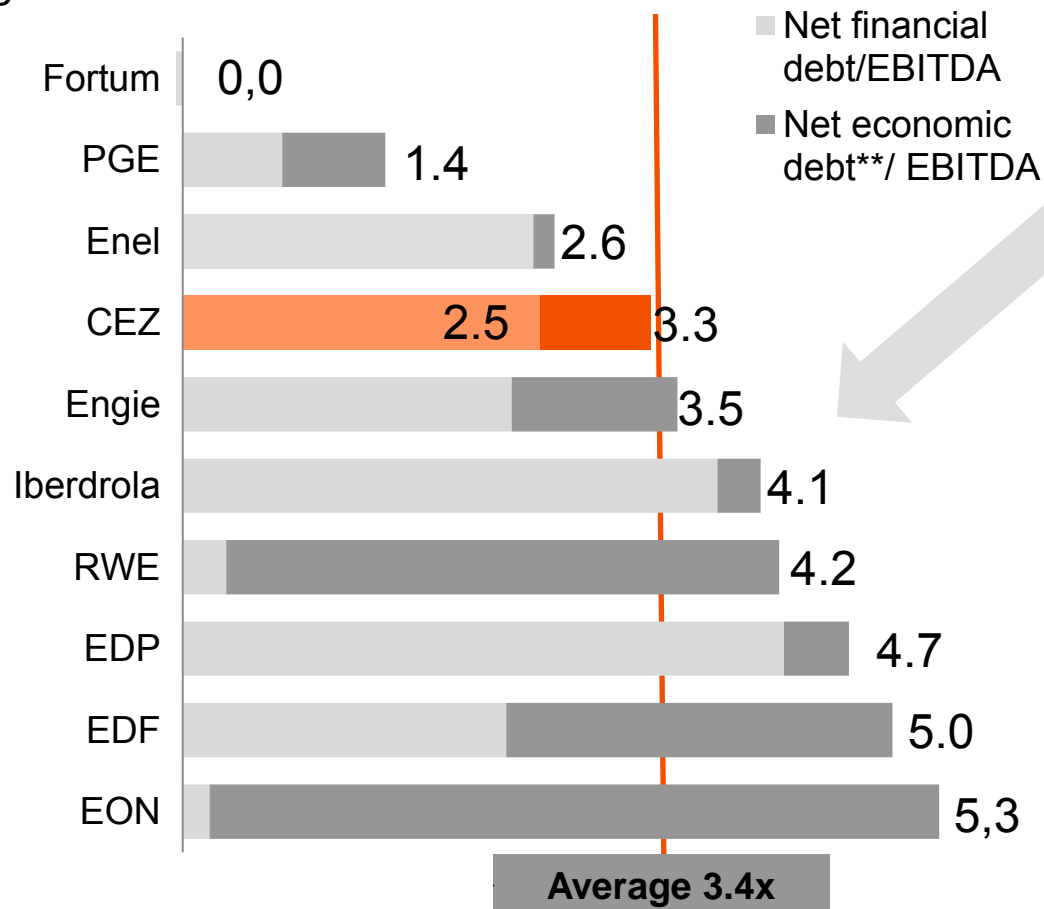
NOT IN FRANCE!!!



PARTLY REGULATION IS TO BLAME,



Net economic debt/ EBITDA* 2016



Examples of regulatory interventions

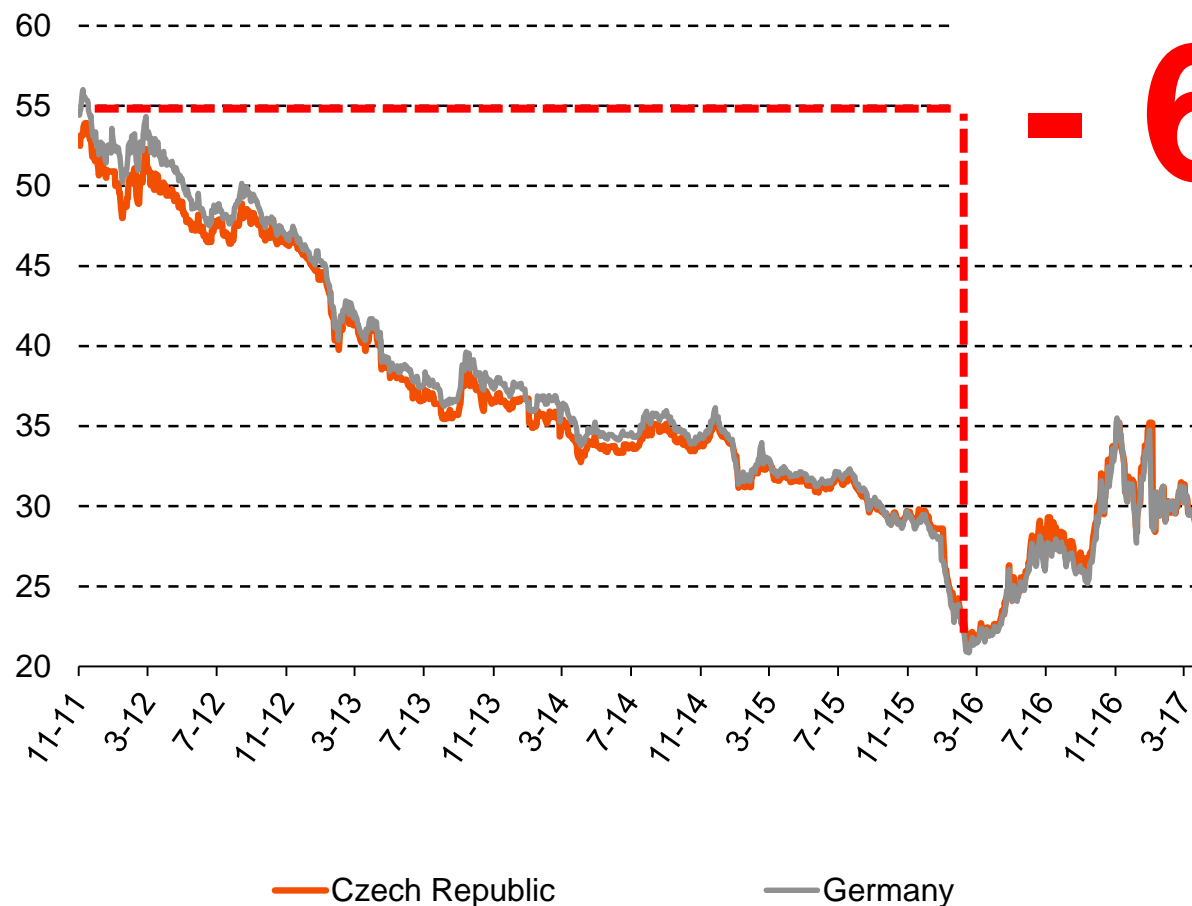
- Shutdown of nuclear power plants in Germany and increased safety requirements everywhere (post Fukushima)
- Emission limits
- Low interest rates (QE)
- Regulation of financial and commodities markets
- Cap on electricity and gas tariffs (proposed in UK by conservatives)

*EBITDA as reported by companies, ** Net economic debt= net financial debt + nuclear provisions + provisions for employee pensions + reclamation provision

BUT MORE IMPORTANTLY ALL THE TIME POWER PRICES KEPT ON FALLING. BLAME FINANCIAL CRISIS....



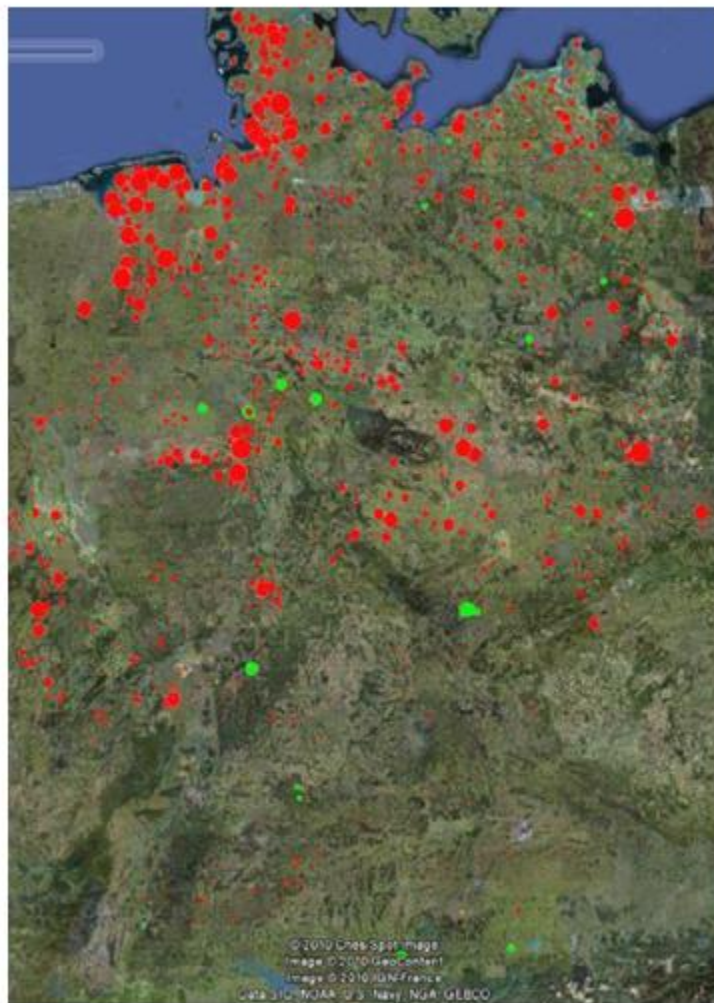
Development of electricity price
(year-ahead baseload, €/MWh)



... AND RENEWABLE GENERATION!



Renewables = “the” game changer



Total capacity of renewables (End 2000)

~ 30,000 installations



Wind energy



PV



Biomass

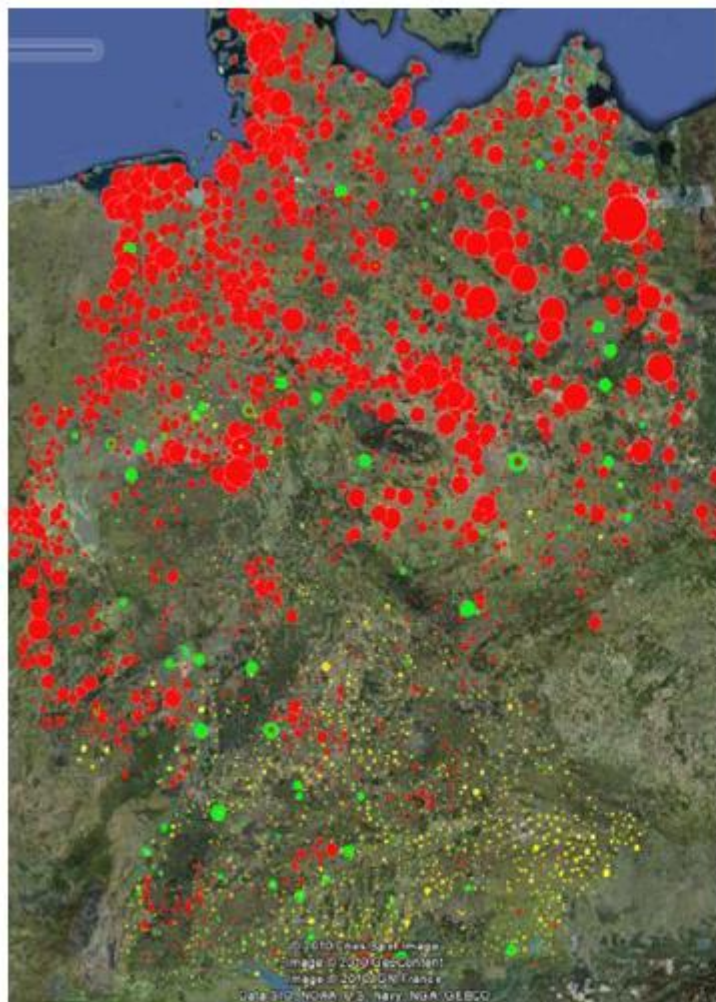
*The circle **diameter** is proportional
to the electrical capacity.*

Sources: 50HertzT, TenneT, Amprion, TransnetBW, internal data

... AND RENEWABLE GENERATION



Renewables = “the” game changer



Total capacity of renewables
(End 2005)

~ 221,000 installations



Wind energy



PV



Biomass

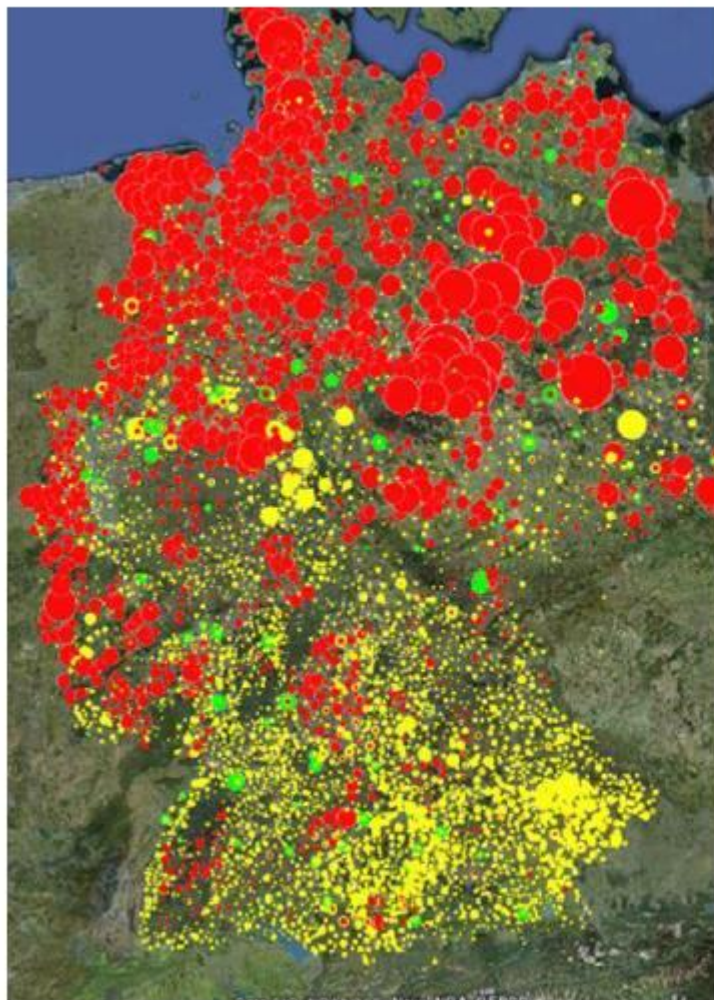
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Sources: 50HertzT, TenneT, Amprion, TransnetBW, internal data

... AND RENEWABLE GENERATION



Renewables = "the" game changer



Total capacity of renewables (End 2010)

~ 750,000 installations



Wind energy



PV



Biomass

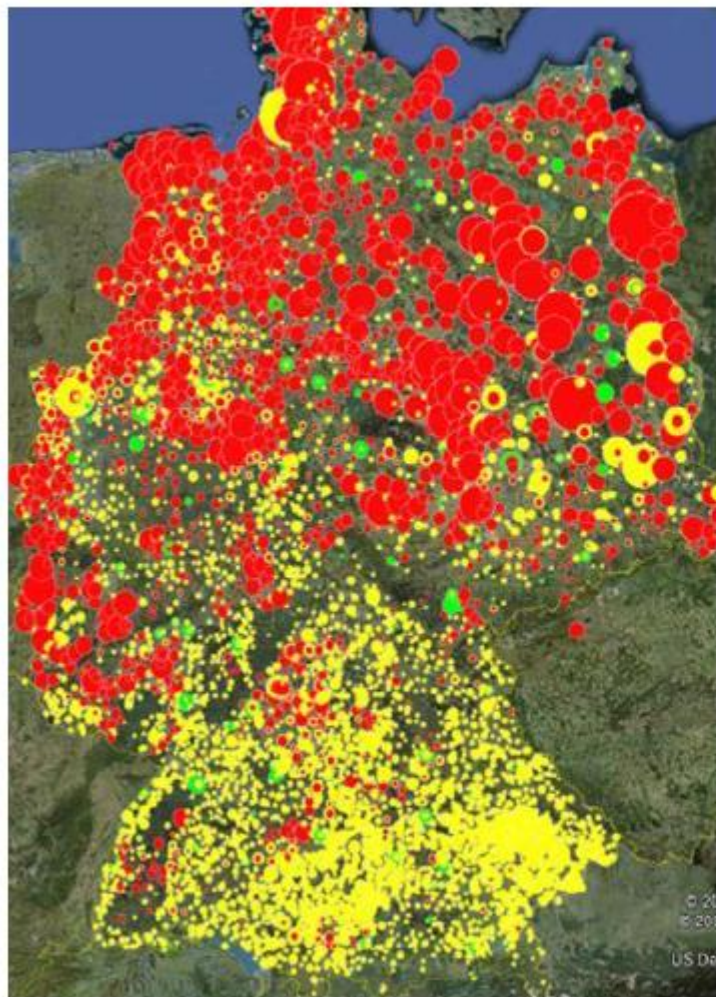
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Sources: 50HertzT, TenneT, Amprion, TransnetBW, internal data

... AND RENEWABLE GENERATION



Renewables = “the” game changer



Total capacity of renewables
(End 2012)

~ 1,300,000 installations



Wind energy



PV



Biomass

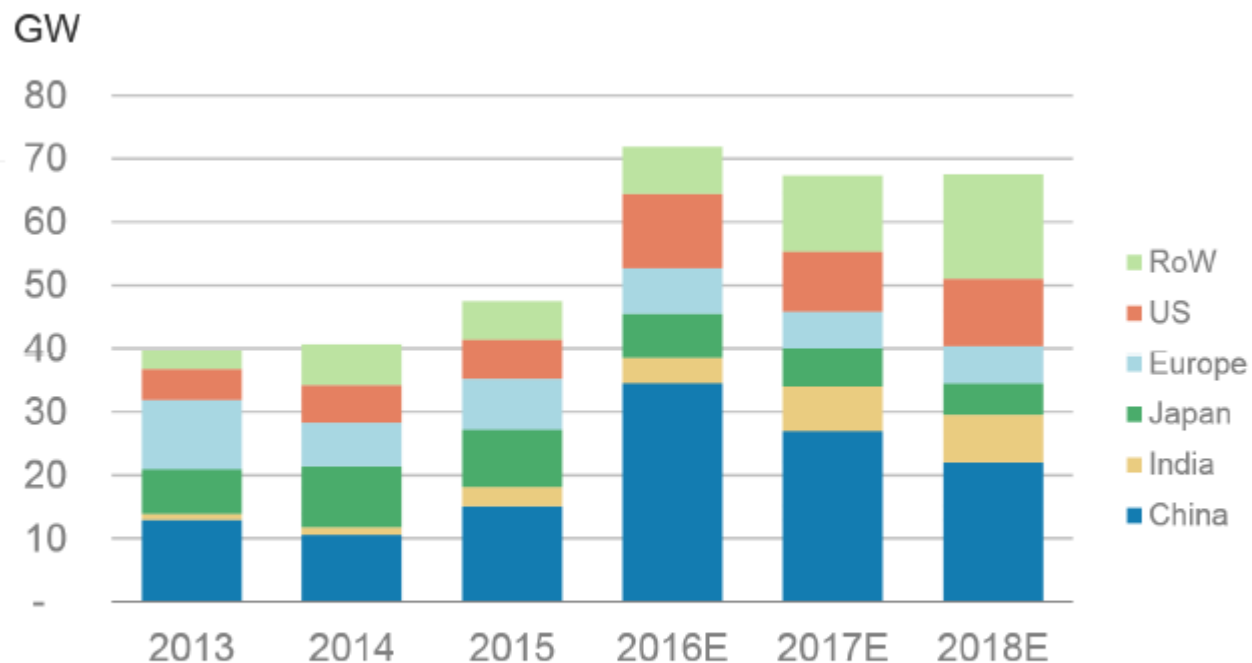
*The circle **diameter** is proportional
to the electrical capacity.*

Sources: 50HertzT, TenneT, Amprion, TransnetBW, internal data

AND IT IS NOT GERMANY ONLY !



Flat to Declining Global Solar Demand Further Pressures Panel Prices

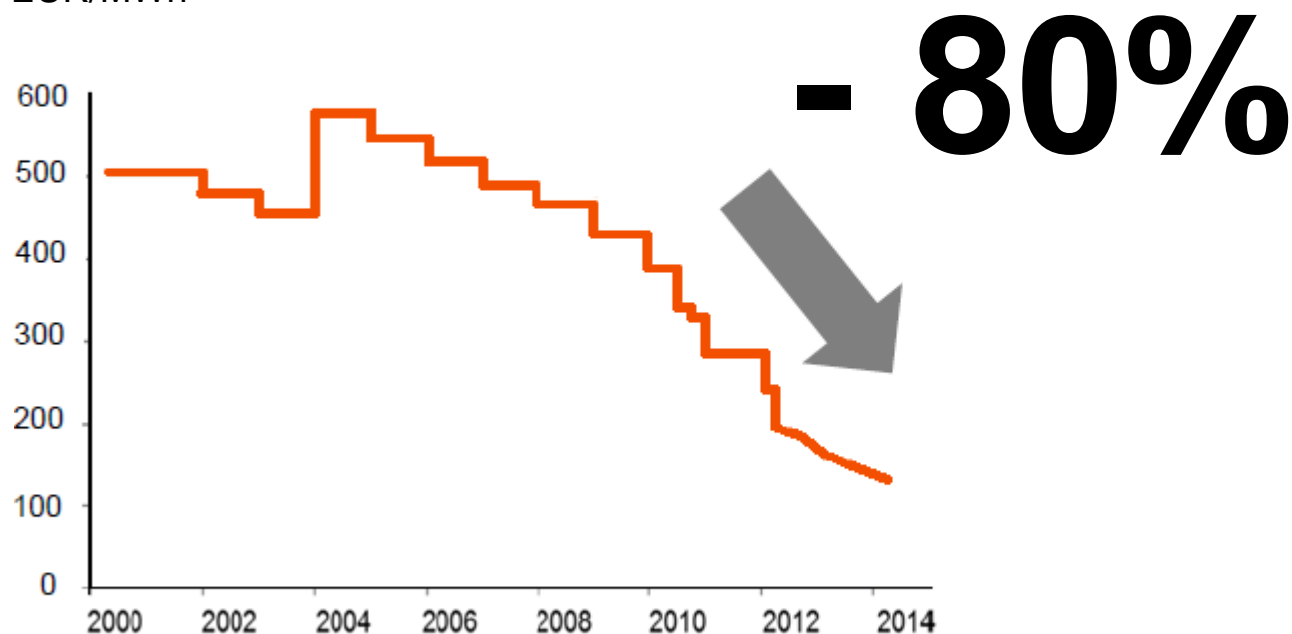


We expect no solar installation growth globally for 2017 and 2018

SUBSIDIZED PRICES („FEED-IN“ TARIFFS) FELL SIGNIFICANTLY



**Development of feed-in tariff
for German solar panels
small installations
EUR/MWh**

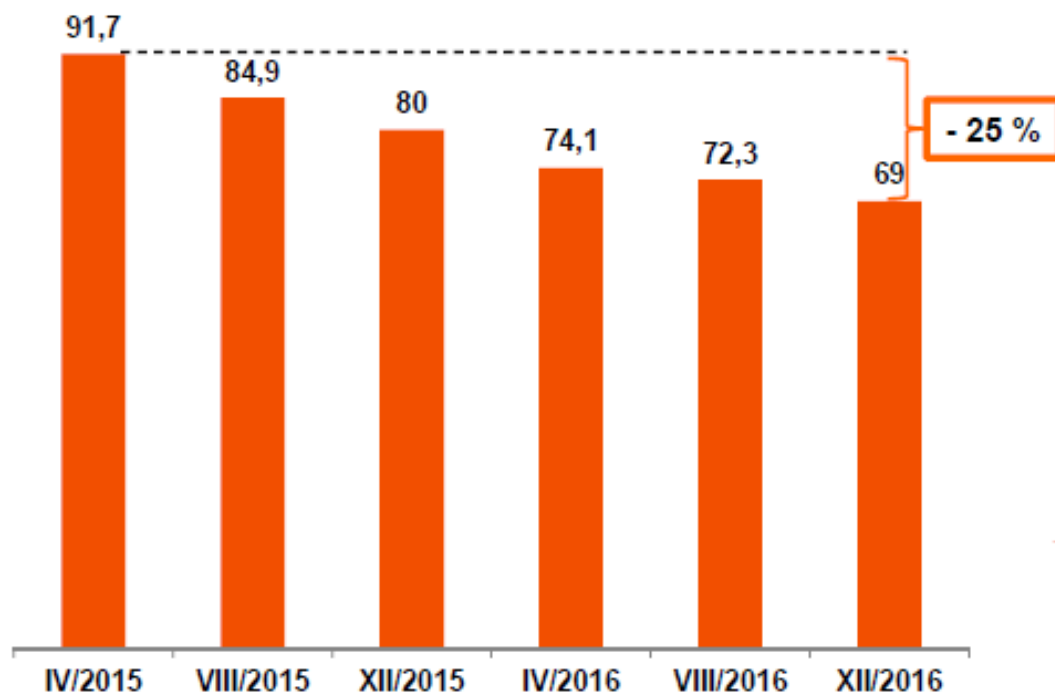


.... AND IT DID NOT STOP THERE!



**Auctions for feed-in tariff for
Photovoltaics, Germany**

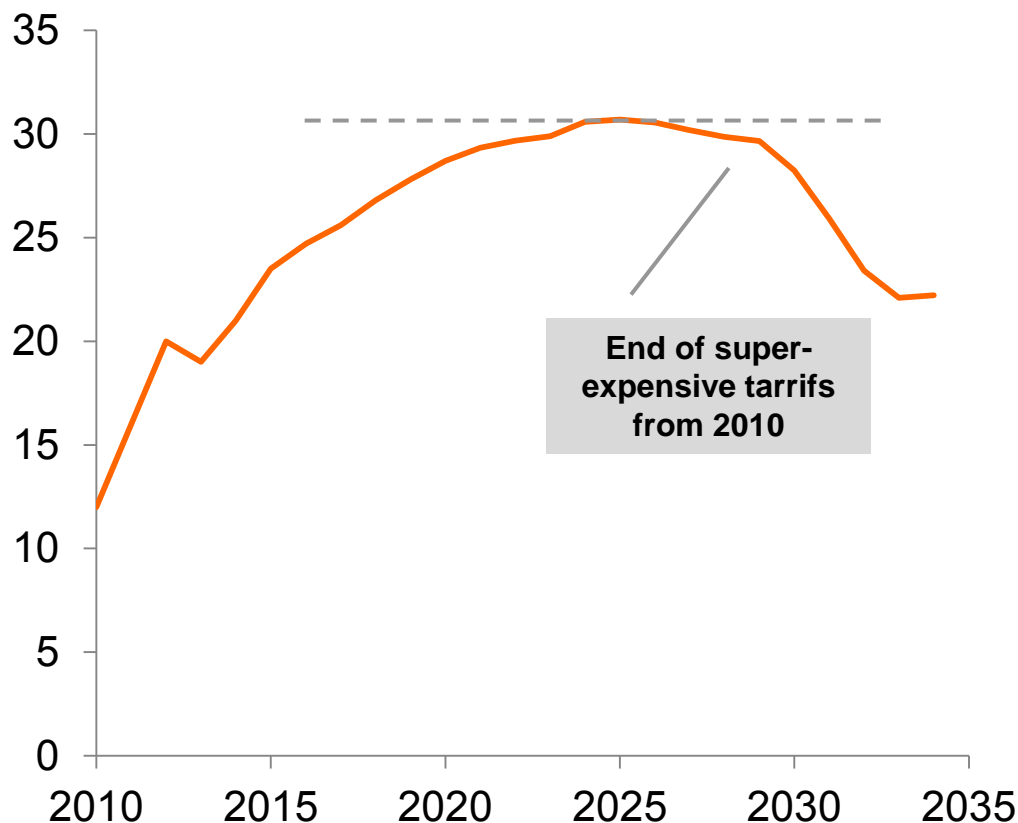
EUR/MWh



DECREASING PER UNIT PRICES WILL RESULT IN LOWER ABSOLUTE LEVEL OF SUBSIDIES DESPITE GROWING VOLUME OF RENEWABLE ELECTRICITY



Total subsidy levels for renewable electricity in Germany*
EUR bn



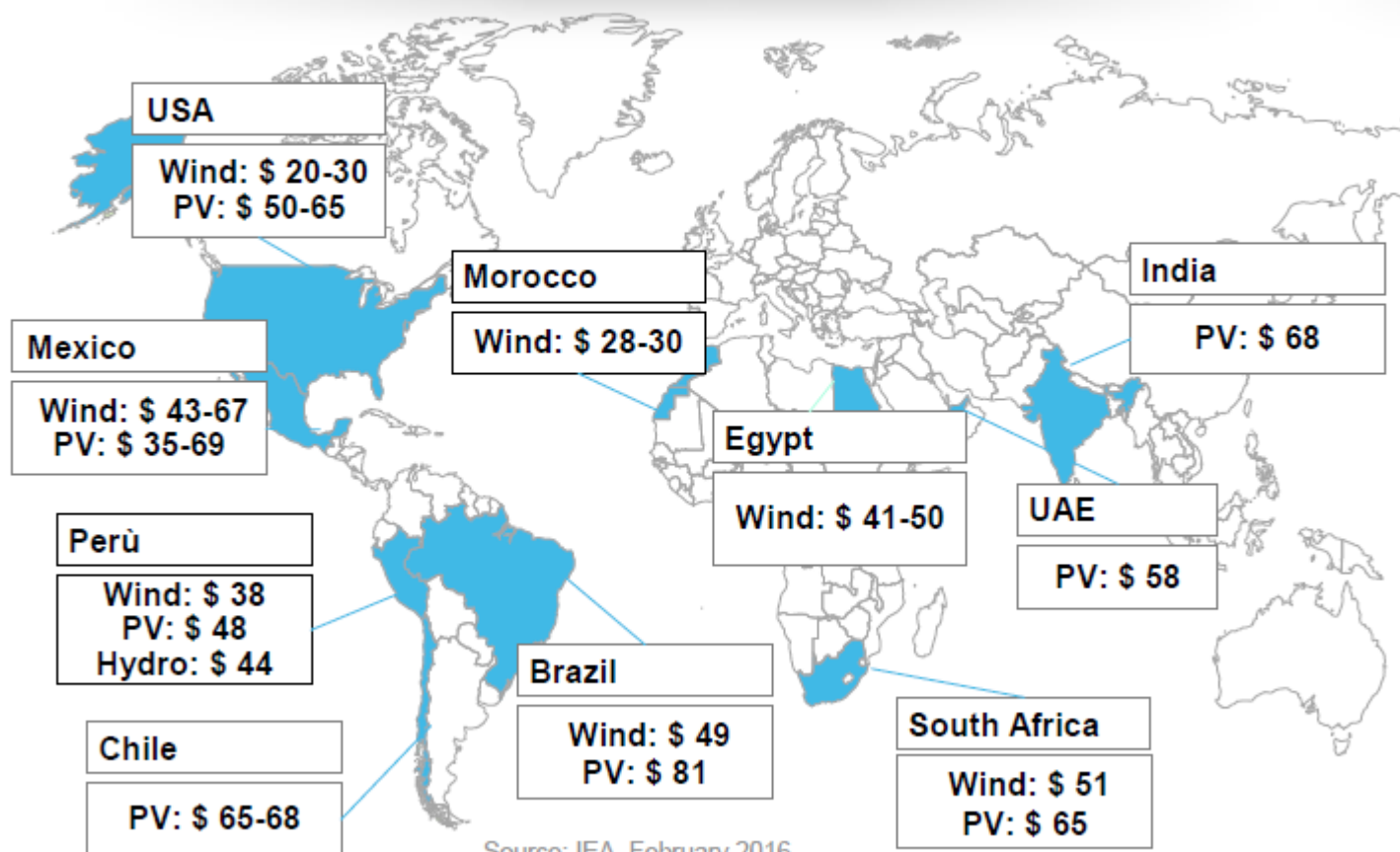
- Renewable energy surcharge represent about 25% of German household's electricity bill.
- In 2016 the basic renewable energy surcharge represented 63,54 EUR/MWh

*Assumptions: meeting obligations related to historical subsidies, future growth of renewable capacity according to current plans, subsidy support for 20 years, wholesale power price 30 EUR/MWh, current cost of renewable power generation

IN MANY COUNTRIES RENEWABLE GENERATION IS A RELEVANT SOURCE FOR POWER SUPPLY INCREASE

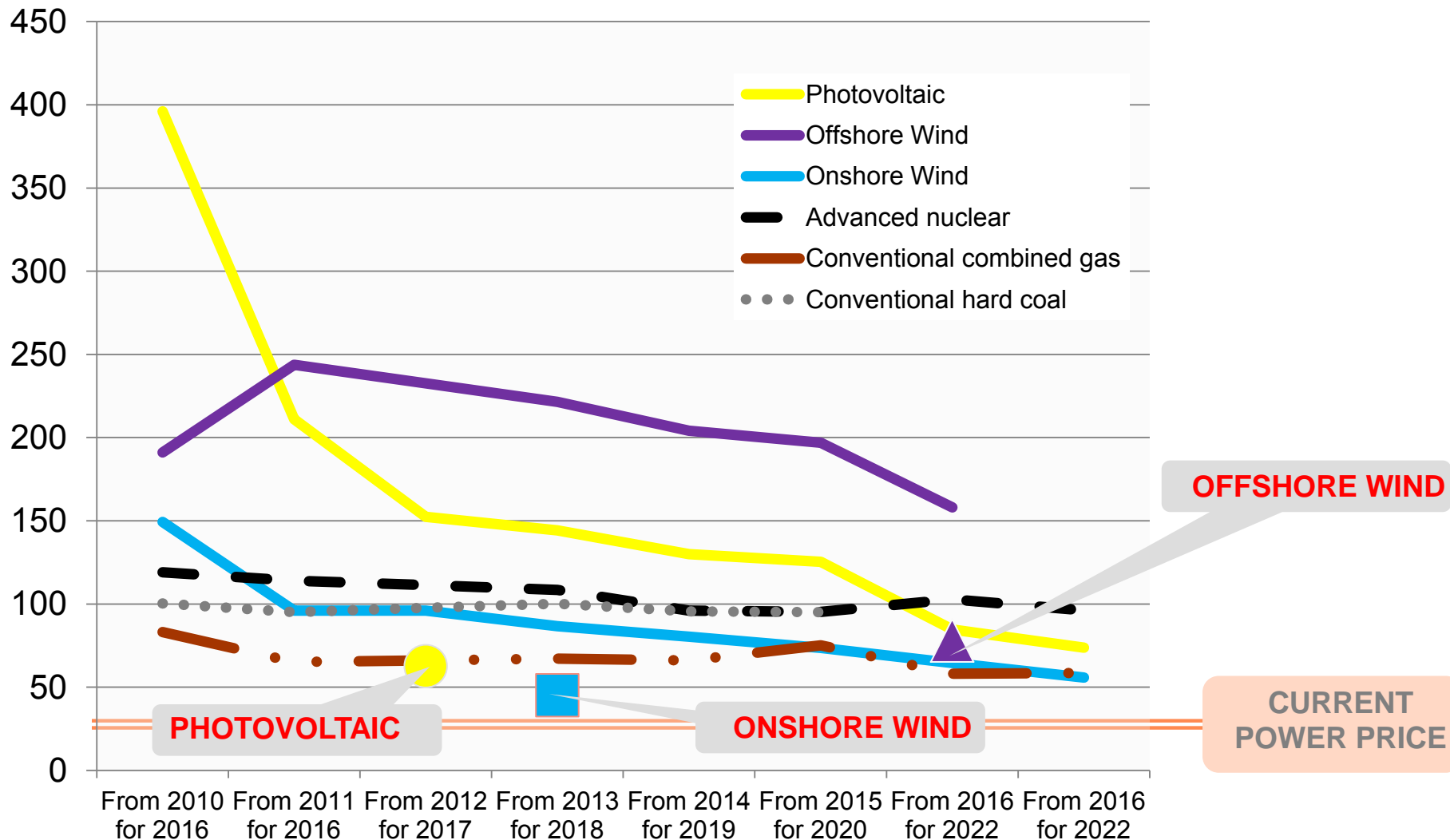


Auctions results



Source: IEA, February 2016
Prices refer to \$/MWh

COMPARING DATA ON PREVIOUS SLIDE WITH LCOE ESTIMATES OF US ENERGY INFORMATION ADMINISTRATION -> RENEWABLES ARE COMPETITIVE WITH CONVENTIONAL GENERATION



CAN GERMANY BUILD FULL BACK-UP FOR ITS RENEWABLE GENERATION? SURE, IT HAS A COST, BUT...

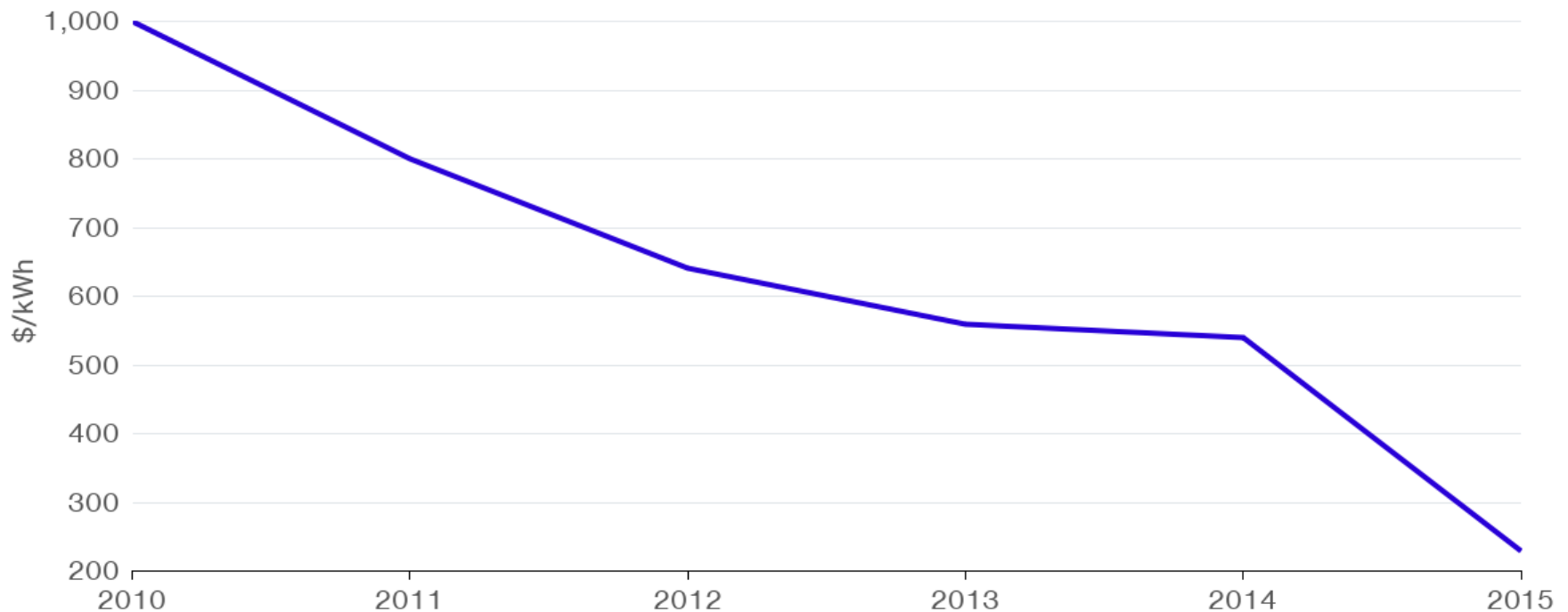


Unit Capex cost	<i>m EUR/MW</i>		0,8	0,8	0,8
Peak Demand	<i>MW</i>		90 000	90 000	60 000
IRR			8,0%	3,5%	8,0%
Annual Consumption	<i>MWh</i>		530 000 000	530 000 000	405 000 000
Lifetime excpetation	<i>years</i>		30	30	30
Upfront Costs	<i>EUR m</i>		72 000	72 000	48 000
Annuity	<i>EUR m</i>		6 396	3 915	4 264
Unit surcharge	<i>EUR/MWh</i>		12	7	11

... AND WE HAVE NOT DISCUSSED BATTERIES YET



Average Battery Pack Price



Source: Bloomberg New Energy Finance

NOTE: Battery prices are an average of BEV and PHEV battery packs

Bloomberg

AND LAST WEEK WE HAVE SEEN ACUTION OF FEED-IN TARIFF IN SPAIN COMING AT BELOW SPANISH POWER PRICES IN THE MARKET



Europe Utilities: Spanish RES auction clears below wholesale price; game changing

Auction shows major shift in costs and technology. Spain has auctioned 3GW of renewables (RES) capacity. The auction asked bidders to offer a discount versus standard investment costs, established by the Ministry. Utilities offered the maximum discount, which implies all-in construction cost of just over €1mn/MW. This is c.20% lower than the costs observed in 2008-10, we estimate. Also, the load factors achieved by these projects range between 35%-40%, vs about 25% ten years ago. This was made possible by larger turbines and better availability of the new machines.

Auction clears below wholesale price. Wind assets will receive a floor of c.€40/MWh and could achieve c.10% Equity IRR, according to our preliminary estimates. This level is currently below Spanish wholesale prices.

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QA



THANK YOU FOR YOUR ATTENTION

ROOM FOR QUESTIONS



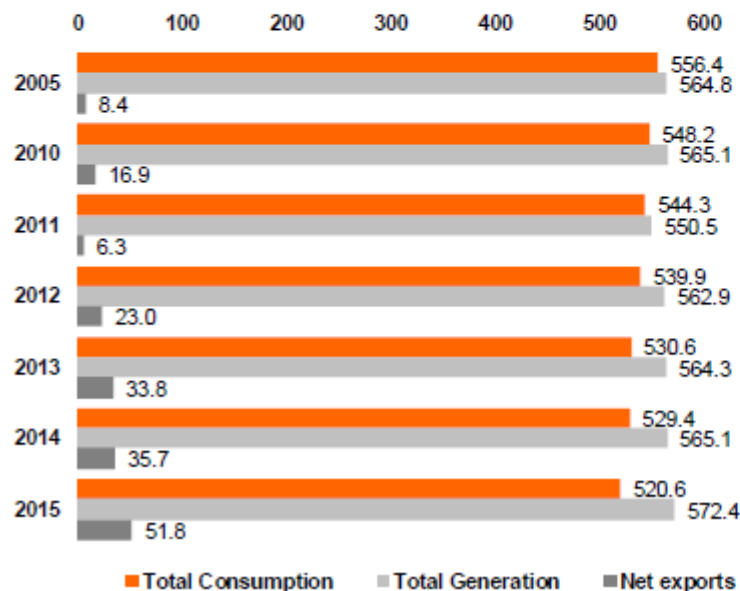
BACK UP

GERMANY – CONSUMPTION AND BALANCE

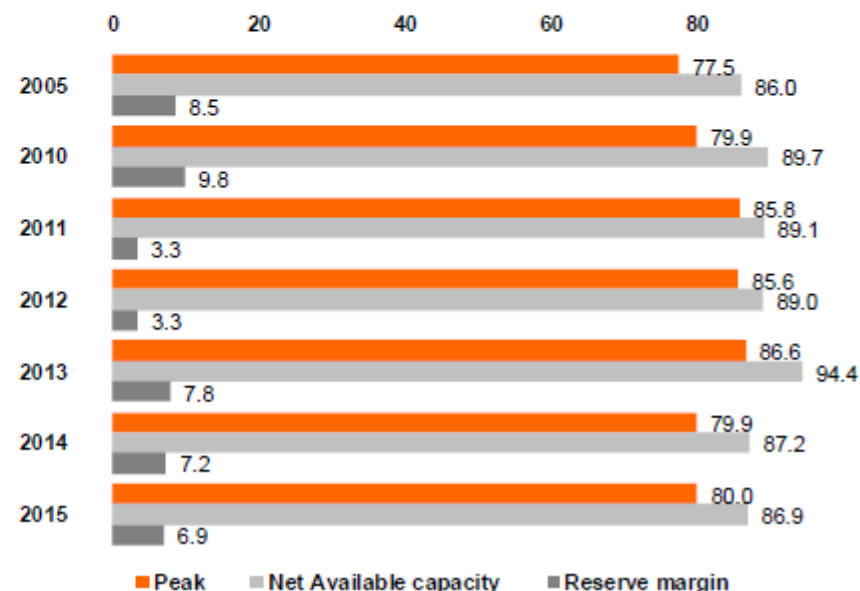


- Decreasing consumption is almost fully covered by domestic production, overall net exporter (52 TWh in 2015)
- Currently sufficient reserve margin may be endangered due to the increase in renewables, overlap of nuclear and coal plants decommissioning and slowdown in the power plants construction. Strategic reserve is to be maintained as a mid-term solution
- System stability is strongly influenced by the large wind capacity (unpredictable power supply) and the fact that most of the wind generation is concentrated in northern Germany while the consumption is located in central and southern Germany. Internal network bottlenecks remain unsolved
- Consumption will more or less stagnate on average in the rest of the decade; it can even decrease

Electricity Balance (TWh)



Reserve Margin (GW)

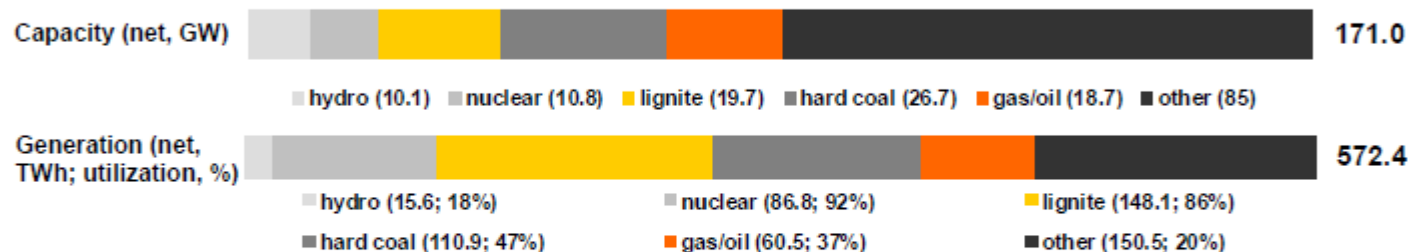


GERMANY – PRODUCTION



- Dominant production from RES, lignite and hard coal (altogether over 2/3 of total)
- Plans to limit production from coal capacity (especially lignite) by introduction of a reserve. Nuclear power plants will be gradually phased-out until 2022
- Production from coal plants does not decrease despite massive RES generation
- Due to strong renewable energy support wind covers nearly 15 % of German electricity consumption

Net Capacity and Generation (by fuel, 2015)



Capacity Age Structure (years/by fuel in GW, 2015)

