

Global overview of Renewable Energy Policies

REFORM Group Meeting, August 2017-08-29

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Why RE-policies?

- External cost of fossil and nuclear
 - CO₂ and other air pollution
 - Nuclear accidents and waste
- Public benefit of R&D and industrial learning

Push renewables to spur carbon pricing

Make wind and solar power even cheaper by opening up access to the electricity grid and ending fossil-fuel subsidies, urge **Gernot Wagner** and colleagues.

Putting a price on carbon dioxide and other greenhouse gases to curb emissions must be the centrepiece of any comprehensive climate-change policy. We know it works: pricing carbon creates broad incentives to cut emissions. Yet the current price of carbon remains much too low relative to the hidden environmental, health and societal costs of burning a tonne of coal or a barrel of oil'. The global average price is below zero, once half a trillion dollars of fossil-fuel subsidies are factored in.

Momentum towards effective carbon pricing is building. California, joined by the Canadian province of Quebec, leads by pricing 85% of such emissions at around US\$12 per tonne. Sweden applies the highest value globally on half of its carbon dioxide emissions, at up to \$125 per tonne. The European Union has the largest system in terms of tonnes covered, pricing 45% of its greenhouse-gas emissions at about \$8 per tonne. China is experimenting with regional cap-and-trade systems. And the US Clean Power Plan encourages states

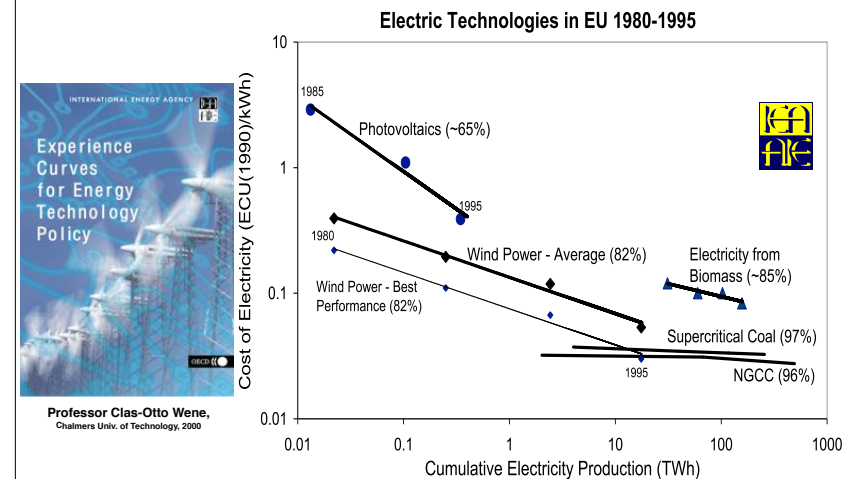
to meet emissions-reduction targets through market-based mechanisms. Yet global emissions continue to climb.

The current inadequacy of carbon pricing stems from a catch-22. Policymakers are more likely to price carbon appropriately if it is cheaper to move onto a low-carbon path. But reducing the cost of renewable energies requires investment, and thus a carbon price.

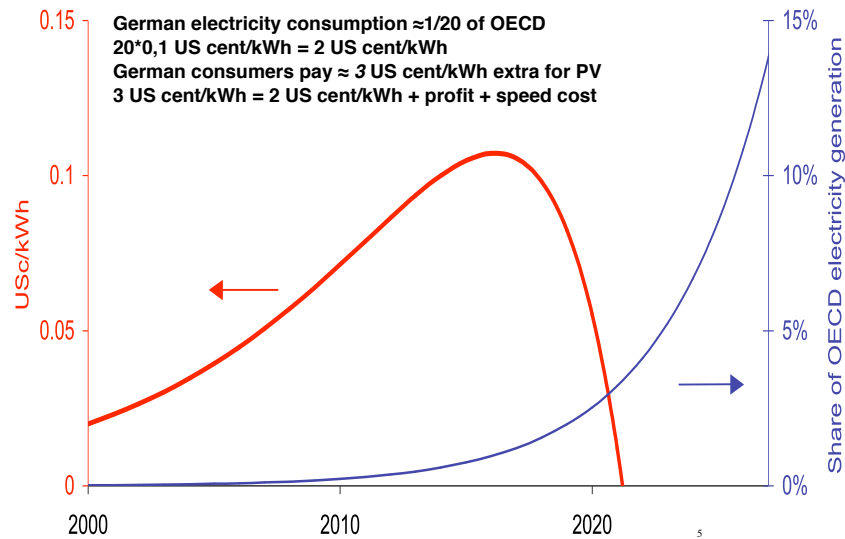
In our view, the best hope of ending this logjam rests with tuning policies to drive down the cost of renewable power

3 SEPTEMBER 2015 | VOL 525 | NATURE | 27

Industrial learning by experience



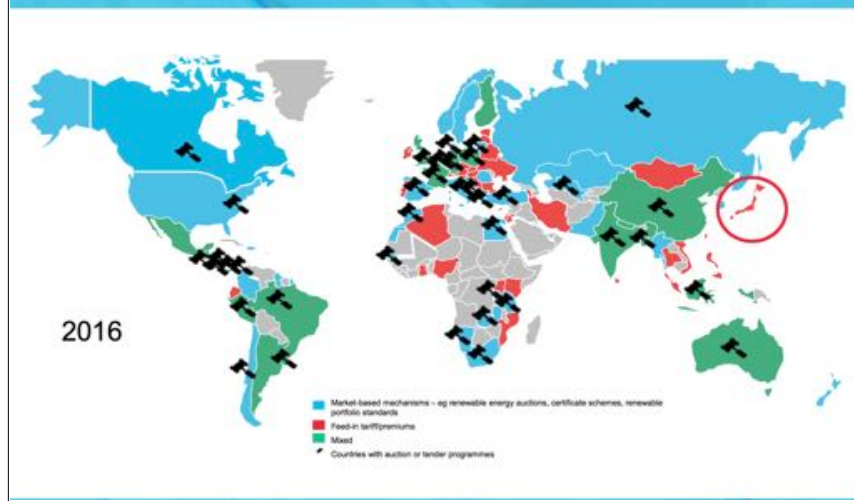
OECD joint effort to make PV competitive



B.A. Sanden, The economic and institutional rationale of PV subsidies, Solar Energy 78 (2005) 137-146

RENEWABLE ENERGY - THE MARCH OF THE PRICE SIGNAL

Bloomberg
NEW ENERGY FINANCE



New low for wind energy costs: Morocco tender averages \$US30/MWh

By Giles Parkinson on 17 January 2016

The north African country of Morocco has achieved a new low for wind energy costs, securing average bids of just \$US30/MWh from its tender for 850MW tender of large-scale wind energy projects, with the lowest at around \$US25/MWh.

The pricing - revealed by its energy ministry at a ministerial round table at the International Renewable Energy summit in Abu Dhabi on Saturday - sets a new low for wind energy pricing in the world, and is boosted by the remarkable wind energy resource sourced from Atlantic trade winds, and some concessional finance.

Abderrahim El Hafidi, vice minister of energy and environment, described the result as "extraordinary" and "amazing" and said it pointed to a "real revolution" in the means of producing energy. Some bids in the US have been in and around \$US25/MWh, although these have been boosted by a 30 per cent production tax credit.



Mexico signs lowest-price solar contracts to date

Contracts have been signed for 1.8 GW of solar in Mexico, including one contract at a price of US\$26.99/MWh by Fotowatio. The median price for solar in this auction was around \$31.70/MWh.

FEBRUARY 6, 2017 BLANCA DÍAZ LÓPEZ

FINANCE MARKETS UTILITY-SCALE PV MEXICO



SUN & WIND ENERGY

The Platform for Renewable Energies

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Danish bidders win cross-border PV tender

30.11.2016

In the first cross-border tender for ground-mounted PV plants in Germany and Denmark, Danish projects were awarded contracts for the entire expansion volume of 50 MW. The auction price was 5.38 cents/kWh.

The German Federal Network Agency was able to announce an auction price for the five successful projects that is almost 2 cents lower than the average price in the last national tender round (7.25 cents). Unlike Germany, Denmark allows agricultural land to be used for PV projects, and this is also the case with the installations that the successful Danish bidders are planning. Agricultural areas are considered much easier to develop than conversion areas, which the German Renewable Energies Act (EEG) confines project developers in Germany to.



Danish project developers will be supplying solar power to Germany at 5.38 cents/kWh. (Photo: iStock)

VATTENFALL

7.33 AM CET / 9-Nov-2016 / Vattenfall (STO:ONOT)

New record for at... hit

Vattenfall wins tender to build the largest wind farm in the Nordics

Today, Vattenfall has won the tender to build Danish Kriegers Flak, a 600 MW offshore wind farm in the Baltic Sea. The winning bid was EUR 49.9 per MWh, which is among the lowest costs in the world for offshore wind power.

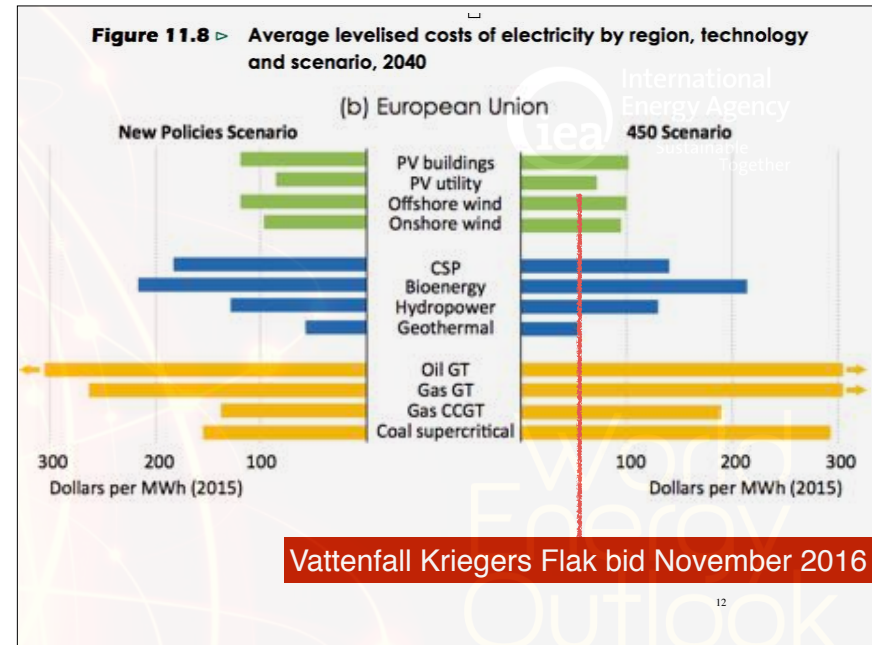
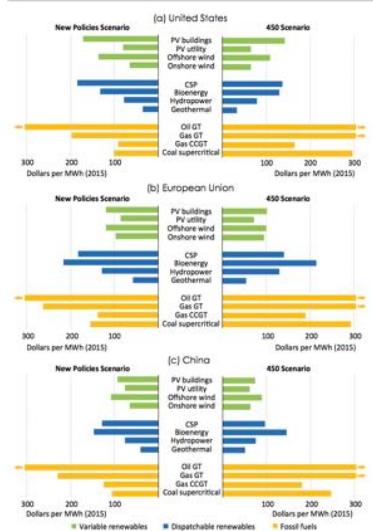
"The announcement is an essential milestone for our ambition to increase our production of renewable power. We are already the second largest offshore player globally. The winning bid of EUR 49.9 per MWh proves that Vattenfall is highly competitive and brings down the costs for renewable energy", says Magnus Hall, CEO Vattenfall.

Kriegers Flak will be Denmark's largest offshore wind farm and can supply 600,000 Danish households with renewable energy – corresponding to 23 percent of all households in Denmark. Vattenfall's investment in Kriegers Flak will be EUR 1.1 – 1.3 billion, pending a final investment decision.

"This is exciting news. I'm very proud of our people in the Wind organisation who once again delivered a winning bid. Vattenfall has won the three latest offshore wind tenders in Denmark; Horns Rev 3, Danish Near Shore and Kriegers Flak, equivalent to the energy consumption of 55 percent of the Danish households", says Gunnar Groebler, Head of Vattenfall Wind.



Figure 11.8 ▷ Average levelised costs of electricity by region, technology and scenario, 2040



Vattenfall Kriegers Flak bid November 2016

Clean Technica news & analysis

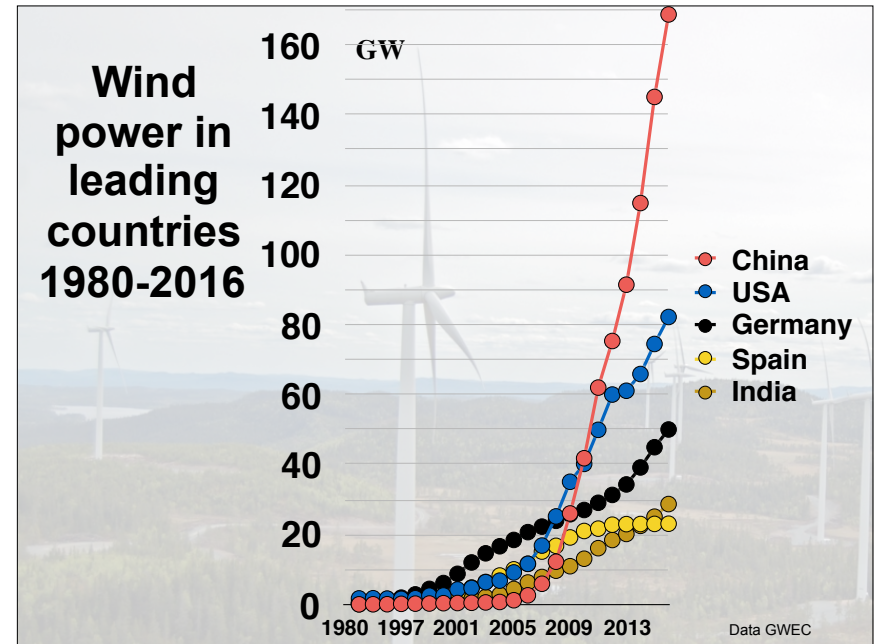
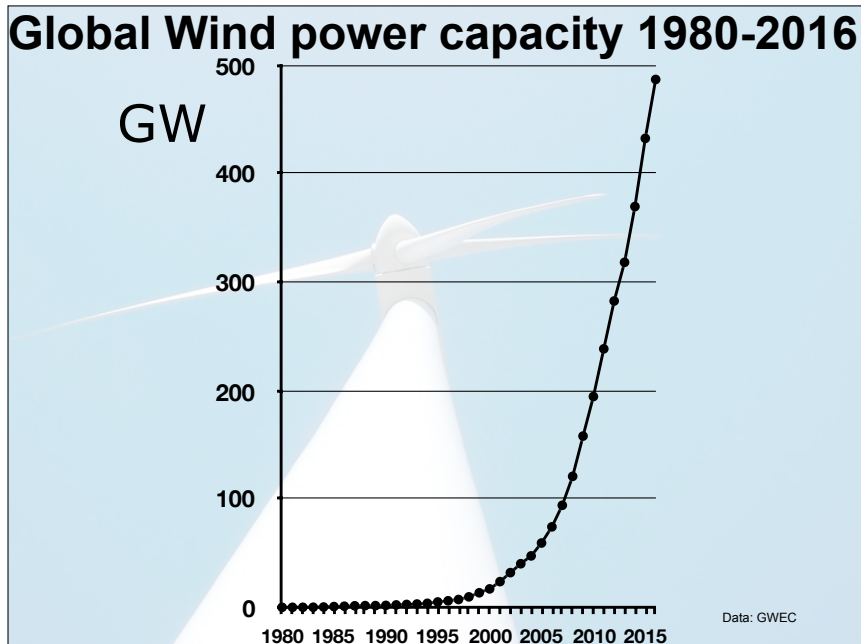
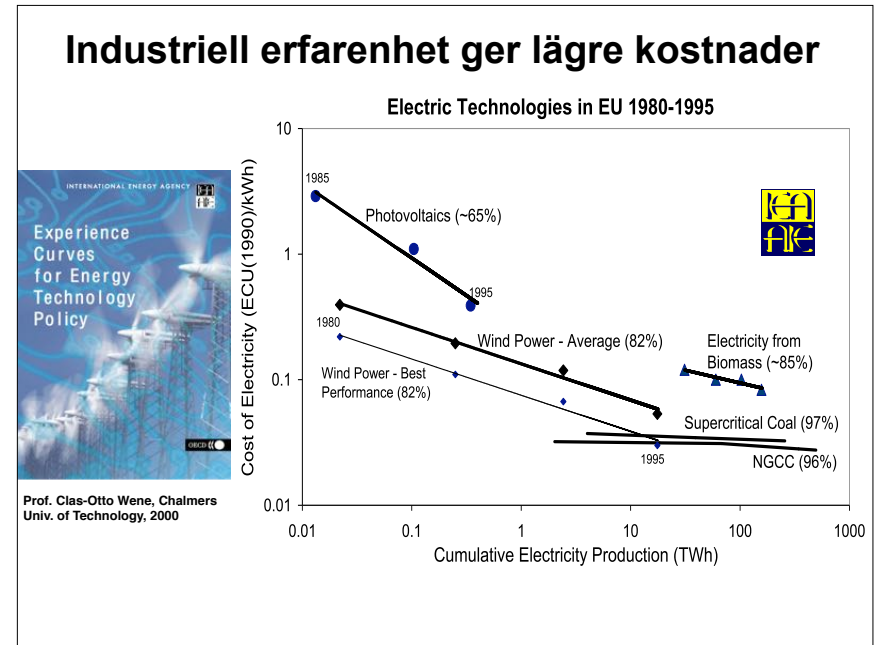
About Electric Car Reviews Exclusives Power

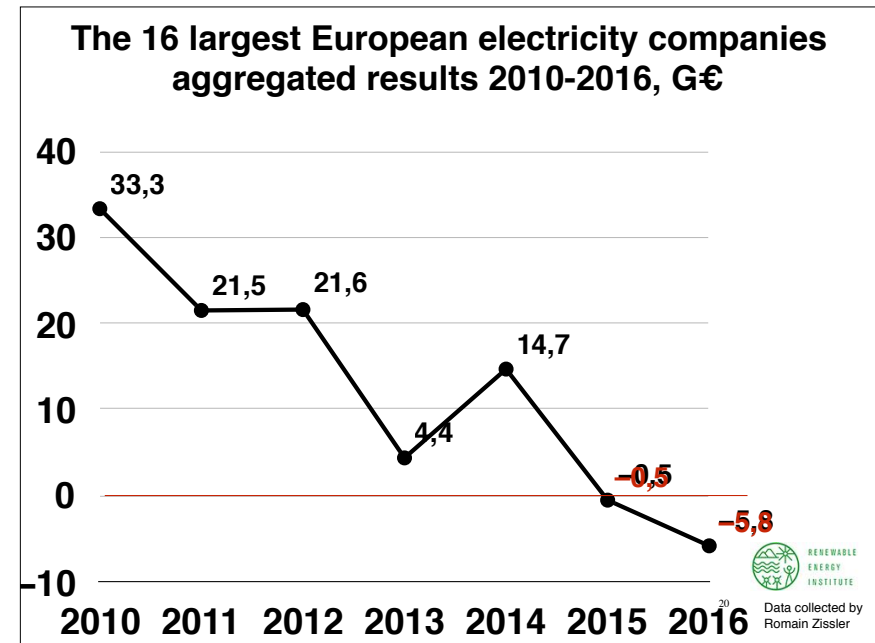
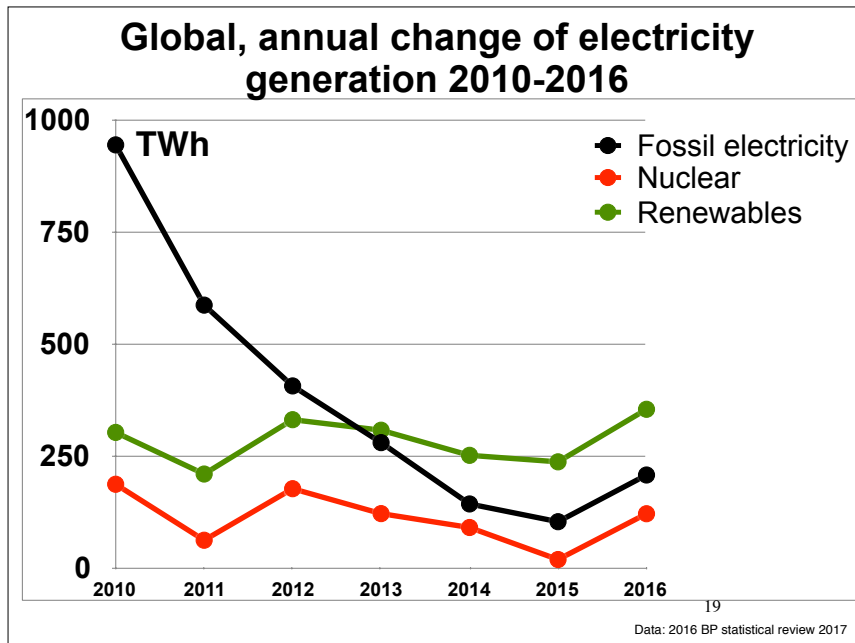
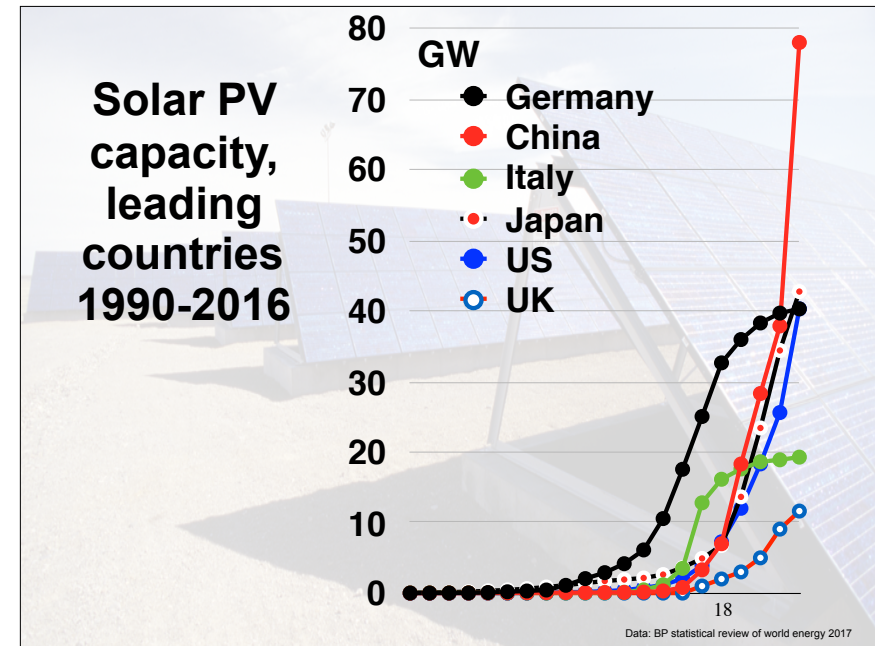
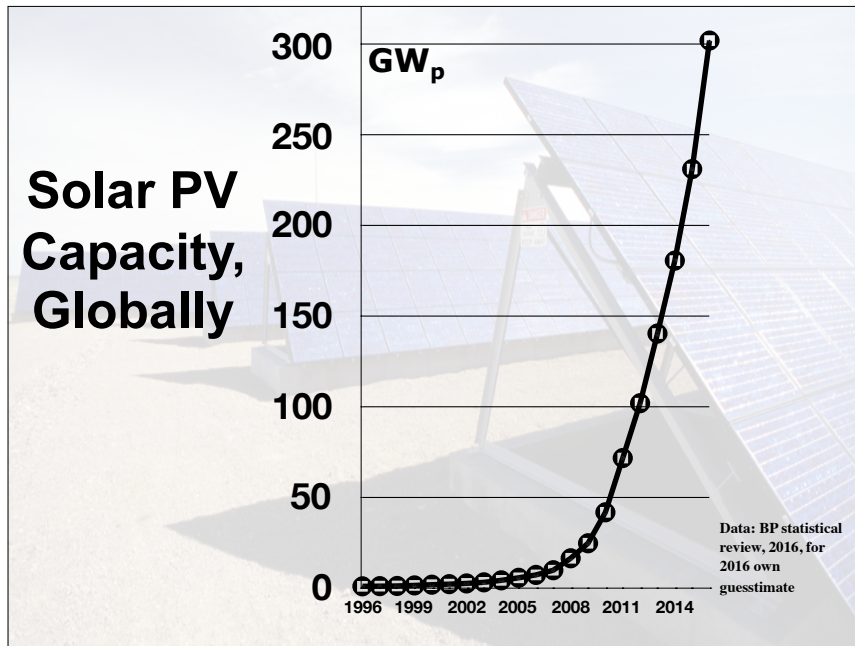
First Subsidy-Free Offshore Wind Deal In German Offshore Wind Auction, DONG Energy & EnBW Win Big

April 14th, 2017 by Joshua S Hill

Germany's first competitive auction for offshore wind projects has not only delivered an average bid price that was "far below expectations" according to the Bundesnetzagentur, but also included what is likely one of the world's first subsidy-free offshore wind projects.

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Rescuing power companies

- Spain, retroactive reactionary legislation
- Germany, subsidised closing lignite plants, socialising nuclear waste cost, repayment of nuclear tax
- Sweden removing nuclear capacity tax, as well as hydropower real estate tax
- Japan transmission fee to pay nuclear costs
- etc...

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Time to internalise externalities:

- Carbon taxes as public finance solution
- Nuclear Accident liability and payment capacity
- Nuclear Waste liability
- ***Now feasible as they are no longer increasing electricity prices!***

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