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Relentless cost reductions will see solar power prosper without support in Britain

December 4 (London) – Solar power will prosper without subsidies in Britain as early as 2020, found a report which used the experience of the Germany to project the outlook for solar costs in Britain and impacts on utilities.

Solar is leading new changes in the power market. In 2015, solar photovoltaic (PV) power globally will overtake both gas and coal to become the number one power generation technology in terms of annual installations.

Solar hardware costs have fallen relentlessly over the last decade, recalling the semiconductor industry, and the British market will also benefit from a maturing supply chain which will see full system costs converge with Germany.

Renewable energy has overturned power markets in Germany, changes writ large on Monday by the country's biggest utility E.ON, which said it was hiving off all its conventional fossil fuel generation to focus on renewables and energy services.

While some analysts, lawmakers and utilities have described the power market in Germany as broken, and a policy failure, E.ON on Monday said its new strategy was a result of rising renewable energy competitiveness and investment.¹

"The notion that solar is expensive is over," said Guido Axmann, co-founder of THEMA1, a Berlin-based think-tank, which supported Thursday's report and its cost projections based on the German market.

The report was written in the context of Britain's plan to force large-scale solar to compete with onshore wind for a smaller pot of support, which will seriously undermine or kill that market.²

Thursday's report found that solar power would be competitive without subsidies as soon as 2020, in the British commercial rooftop market, including schools and offices. The domestic rooftop and large-scale solar markets would also be economic within the next 10 years.

"We are firmly convinced that solar will become the bedrock of the global power system going forward," said report author Gerard Reid, a partner at corporate finance company Alexa Capital, which finances low-carbon energy projects in Germany and Britain.

"That said the road going forward is uncharted and difficult. Our message to the UK government is to reduce support for solar but do so gradually."

Once all support is withdrawn, domestic solar will critically depend on households increasing the amount of solar power they consume, rather than exporting it to the grid. In this way, users will avoid selling surpluses at very low wholesale power prices, while buying less mains electricity at much higher, domestic power prices.

As costs fall, batteries could play a significant role in this regard, by allowing households to consume their own power for several hours after sunset, critically so in the British domestic market where peak demand is in the early evening.

“As battery costs continue to fall, households will be able to deploy solar panels without government support,” said co-author Gerard Wynn, of GWG Energy, a consultancy focused on energy and climate policy.

“Utilities and policymakers have consistently under-estimated the rate and impact of solar market growth, and this could be another surprise.”

As governments grapple with the aftermath of the global financial crisis, it is vital that they avoid passing excessive costs to consumer power prices. They can do this by steadily reducing solar support, and also by policy diversification, for example using grants for residential solar batteries, and low-interest credit via the Green Investment Bank, which has not yet invested in solar PV.

Solar cost reductions would trigger similar changes in the British power market as already seen in Germany, which prompted E.ON’s extraordinary u-turn on Monday.

Main findings of Thursday’s report:

- The three markets in solar power – large-scale “solar farms”, and commercial and residential rooftop – will be economic without support in Britain within the next decade. Such an outcome assumes progressively falling support under a stable policy regime.
- The growth of solar power may threaten electric utilities which fail to transition away from solely supplying electricity, to providing residential energy services and decentralized power.
- Unsubsidised residential solar power is cheaper with battery storage, achieving payback periods of little more than 10 years by 2020.
- The variability of solar power will involve some grid integration costs at higher penetration levels, but these should be weighed against non-market benefits.
- Solar PV in Britain faces a seasonal mismatch with peak power demand which can be balanced with a more intelligent grid and electricity interconnection into Europe.

The report makes several policy recommendations:

- Solar PV will be a critical technology in the 21st century; the British government should continue to support the industry until it is fully economic, under a regime of progressive, predictable reduction in support.
- Policymakers can reduce the impact of solar support on domestic power prices by shifting some price-based support to low-interest credit, and grants for domestic battery packs which boost the value of unsubsidised residential systems.

- The government should support measures to optimise the grid integration of renewables, including smart meters and an increasingly computerised grid which uses digital technologies for a faster, deeper, more responsive network.
- The government's plan to force large-scale solar to compete with onshore wind for less support will damage that market. Concern about amenity impacts can be addressed through best practice, for example avoiding building on prime agricultural land.

NOTES FOR EDITORS:

For further information, please contact:

Gerard Reid, Alexa Capital, gerardreid@t-online.de +49 173 6060347

Gerard Wynn, GWG Energy, gerard.f.wynn@gmail.com 07990 560 525

Stefano Ambrogi, stefano.ambrogi@europeanclimate.org, European Climate Foundation, 07557 916940

THEMA1 is an independent Berlin-based think-do-tank specialised in accelerating a low-carbon transition. <http://www.thema1.de/>

Alexa Capital delivers corporate advisory and financing solutions across the energy, energy infrastructure and technology sectors. <http://www.alexacapital.com/>

GWG Energy is a consultancy focused on analysis and communications in energy and climate change.

Gerard Wynn and Gerard Reid publish collaboratively on the Energy and Carbon Blog, at <http://www.energyandcarbon.com/>

¹ Quotes from E.ON chief executive Johannes Teyssen on Monday, Dec. 1 (<http://www.eon.com/de/presse/presse-konferenzen/archiv/2014/12/1/pressekonferenz-zur-neuen-konzernstrategie.html>):

“EON will in the future totally concentrate on renewable energy, the distribution network and customer solutions, and with that concentrate on the most important elements of the new energy world.”

“In no other form of power generation is so much capital flowing as in renewables, a trend which will not slow down but accelerate. Renewable energy revolutionises not only power generation but also together with other technical innovations the whole role of the customer. He can already produce a large part of his own needs with a solar system. Going forward thanks to energy storage solutions he will be able to become independent of the classical distribution of power and gas.”

“A big driver of the changes in German energy markets is the ever improving maturity and viability, and as a result growth, of renewable energy.”

² Department of Energy and Climate Change (DECC), 2014. *Government response to consultation on changes to financial support for solar PV*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360280/Government_response_RO-FIT_changes_to_Solar_PV_-_FINAL_2014-10-02.pdf