

The Final Battle

Why Solar Power Spells Doom for Conventional Baseload Power Plants

By Volker Quaschnig

In 2011, Germany installed more than 7 Gigawatts of photovoltaics, roughly twice as much as the US over the same period. Since these record statistics were announced, representatives of large power corporations and the economic experts of Chancellor Merkel's center-right coalition have called for an end to this fast growth almost every day. They charge that German rate payers cannot pay the price – and that the policy goes too far. Journalists largely reproduce these opinions without investigating them. As a result, solar energy – once highly praised – has quickly become synonymous with everything that is wrong about Germany's switch to renewables.

The current anti-solar mood was probably brought about by large energy firms, which still have – despite their high unpopularity – excellent contacts in the political world. Strategists at these firms are now honestly worried about the fast growth of photovoltaics – for it increasingly threatens to undermine their business. When, a decade ago, Chancellor Gerhard Schröder's governing coalition of SPD and the Greens made it clear that they would change energy policy, large energy providers nonetheless continued to bank on classic coal and nuclear plants. By 2011, renewables already made up 20 percent of Germany's power supply, but RWE – one of Germany's four biggest power providers – still only reported one percent renewable power in its supply on its website. When Angela Merkel's government extended nuclear plant commissions at the beginning of 2011, this strategy seemed to have paid off. In the long run, the big power providers largely wanted to resort to offshore wind, which will only get going slowly – and therefore not endanger the current business model much.

But then came Fukushima, and Germany once again resolved to switch to renewables. The announcement of solar success last year only made things worse for the big power firms. In 2011, solar arrays were already covering a large part of peak demand, especially in the spring and summer, thereby offsetting expensive conventional peak load plants. As a result,

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prices on power exchanges dropped, bringing down the margins of what – up to then – had been the most profitable coal and nuclear plants. It is already clear that the solar boom will mean that brown coal plants and nuclear plants that covered the base load will have to be ramped down at midday. More importantly, they may often have to be completely shut down if Germany installs the same amount of photovoltaics over the next five years as we did in 2010 and 2011. Yet, brown coal and nuclear plants do not like to ramp up and down. They are not really able to keep up with such fluctuations, and wear and tear increases significantly when they try. Overall, their profitability suffers in the process. Sooner or later, they begin to lose money and may even end up being shut down altogether. In contrast, gas turbines ramp up and down quite easily, but the big energy firms have very few of them.

For some time now, the question has therefore no longer been whether Germany can switch to renewables via coal and nuclear plants. Now that Germany has so much solar power, the situation is an either/or: a growth in renewable energy will require the shutdown of old, baseload power such as coal and nuclear power plants. That explains the tremendous opposition to solar power over the past few weeks. So why have these big energy corporations not massively invested in renewables in Germany if it is all so lucrative and feed-in tariffs are too high? The answer is simple: the move would have spelled doom for their own inflexible conventional power plants. What's more, the returns on many solar arrays are considerably below the margins common in the conventional power plant sector. Homeowners are pleased to get a three or four percent return on their solar roof. Here, new competition is cropping up, and the energy firms do not know how to face it.

If compensation for solar power could be drastically cut or the volume of installations limited, as has been recently demanded, this competition would end for the time being. But if you take a look at how much the cost of solar power has dropped over the past few years, you realize that time has probably run out for such complaining. From 2008 to 2012, Germany's feed-in tariffs for photovoltaics were roughly cut in half. At 24.43 Eurocents per kilowatt-hour, owners of small rooftop arrays now get paid roughly the same for their solar power that they pay for power from the grid. Further dramatic reductions in feed-in tariffs will follow in 2012 and 2013, so that the price will probably be cut in half once again over the next 2 to 5 years. At that point, there will be no stopping solar power. When people only need half the retail rate to pay for their solar array, millions of homeowners will immediately want to start generating a large part of their power themselves. At that point, every kilowatt-hour you make yourself is very profitable compared to the price from the grid. Power you cannot immediately consume yourself can

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be stored in batteries locally and used lucratively after sundown. Direct solar heating even becomes financially attractive when solar power costs half as much. Even when no feed-in tariffs at all are then paid for the solar power sold to the grid, solar arrays will remain highly profitable. The only way to stop this from happening is to impose a tremendous tax on solar arrays, but such action will be hard to implement politically in light of Germany's efforts to mitigate climate change.

In other words, German large power providers can expect to see a large part of their retail customer market disappear in a few years. They would then be forced to increase their prices even further, which would only encourage more people to install solar. Over the next 10 to 20 years, photovoltaics are expected to provide up to 30 percent of Germany's power supply. But for power providers, generating solar power with their own large solar arrays for retail customers is not really an option. They would have to transport the power across expensive lines to customers, and even then they would only be competitive with locally produced power in rare exceptional cases.

For power firms like RWE, one of Europe's largest utilities, it's all or nothing over the next few months. They will continue to try to win this final battle by ostensibly showing concern about cost. If their strategy works, they might be able to delay the ultimate boom of solar power by a few years. But it is too late to stop it altogether. It is also questionable whether it makes sense for the German economy to slow down the growth of solar. China is about to get going with its own extremely ambitious growth targets for solar power. If Germany's government slows down the growth of solar power at home, they will simply hand over technological leadership to China – and undermine their own climate protection targets at the same time. The development in Germany will be directly transferred to many other countries worldwide soon. The immense price reduction of solar electricity will initiate a revolution of the global electricity supply already within this decade. Maybe this will be the way global climate protection can succeed.

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About the author

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