

## **Germany Rethinks Path to Green Future**

By *Stefan Schultz* in Bremerhaven

**Germany's energy revolution is the government's only major project -- but the problems keep piling up. The pace of grid expansion is sluggish, and electricity costs for consumers are rising. The environment minister wants to fundamentally alter the way green energy is subsidized, but will it mean putting the brakes on the entire project?**

The cornerstones of Germany's energy turn-around can be admired in a hall in the northern port city of Bremerhaven. Standing on three rust-brown feet apiece, each of these immense, yellow-painted trunks weighs as much as 900 elephants. Soon, special ships will come and sink these steel monsters into the seabed, where they will support the wind turbines that are supposed to supply the country with green electricity.

Before they do, Environment Minister Peter Altmaier will go to Bremerhaven to inspect the work of Weser Wind and Areva Wind, the companies building them. Areva calls these wind-turbine supports "tripods." Peter Altmaier has a more poetic term, dubbing them "cathedrals to industrial culture."

This last week, there was a strict division of labor at several locations around the country. From Monday to Wednesday, the environment minister went on a whirlwind tour of Germany. Almost everywhere he went, workers wearing vests and helmets were welding, bolting, stacking and installing the building blocks of the country's energy revolution. Altmaier's job was to endow this work with symbolic significance, elevating as many of these welders as possible to the status of torch-bearers of the coming green republic.

The intended message is that Germany is moving away from nuclear power and embracing renewable energy sources. And, as the country's environment minister, Peter Altmaier is naturally the driving force behind the project.

The minister, who claims he will soon "have personally greeted almost every wind turbine and solar panel in Germany," has been in office for barely 100 days, yet he's already playing catch-up. According to current estimates of the date of the next general election, he may have as little as 15 months to make his mark on the mammoth undertaking that is Germany's energy about-face., which envisions making renewables account for 35 percent of the energy mix by 2020 and phasing out all of Germany's nuclear power plants by 2022.

## **Grid Expansion Fails to Keep Pace**

Altmaier has certainly set ambitious targets for himself for this period. One of these is to convince Germans that the turn-around is "the greatest identity-shaping project of a generation and comparable in significance to the country's reunification." At the same time, he wants to slow the expansion of the development of renewable energy so that it remains affordable for taxpayers.

Simultaneously enthusing the population and putting the breaks on the race toward the renewable-energy future promises to be an unenviable communications challenge for even a silver-tongued politician like Altmaier. Unfortunately, he doesn't have a choice since the two are interwoven: Attractive feed-in tariffs have given eco-friendly electricity production such a boost that the expansion of the power grid and many other projects simply haven't been able to keep pace. Timetables are being mixed up, costs are spiraling out of control, and every day that the chaos continues, the green-republic project risks losing more supporters.

In an attempt to bring some order back into the energy turn-around, Altmaier now wants "to work out a coherent concept for reforming subsidies for green power generation." He hopes this will cut costs without crushing all the country's eco-friendly dreams, while at the same time winning the backing of opposition politicians.

During his summer trip across Germany, it quickly became clear that he would have to face more or less every lobbyist the industry employed to have any chance of drawing up such a plan. And he'd have to think far beyond simple subsidies for eco-friendly electricity.

Altmaier sits in the restaurant of the "Komfort" hotel in Bremerhaven surrounded by representatives of the wind-power industry. They're eating pork and broccoli. As he chews and speaks, the minister draws a gently rising graph on a napkin: The cost of phasing out nuclear power -- or, rather, how the government would like this cost to increase.

"We have too much wind in Germany," Altmaier tells the wind lobbyists. "We want to offer you reliability, but not all of your dreams are going to come true." The minister draws a second, significantly steeper graph. This one represents the actual costs, which are getting the government into hot water at the moment. Altmaier considers the problem briefly before using the cost-graph napkin to wipe sauce off his chin.

The Renewable Energy Act (EEG) is the biggest cost factor in Germany's energy reorientation. The rules for the subsidies are quite simple: Operators of wind farms, solar arrays and biogas plants get a guaranteed, fixed feed-in price for all electricity they generate over a period of many years. Power companies are required to purchase this energy, but at a price much higher than what they get for it on the market. The difference is paid for by consumers through their electricity bill.

The EEG both guarantees big profits to anyone who invests in renewable-energy plants and makes the construction of such plants attractive. More than a fifth of the electricity produced in Germany already comes from renewable sources. Not surprisingly, this has led 65 countries worldwide to try to copy the German model.

### **Winners and Losers of the Nuclear Phase-Out**

There's only one problem with the EEG: It's been too effective. Green electricity plants aren't being built gradually but, rather, as quickly as possible. Consequently, the costs are rising at a faster-than-expected rate. The average household in Germany currently pays €144 (\$181) a year for these subsidies, and that figure looks set to rise to more than €200 in 2013. In all, it has been estimated that the operators of green power plants have been promised more than €200 million.

Such numbers are big enough to exacerbate social inequalities in Germany. Recipients of "Hartz IV" welfare benefits for the long-term unemployed, for example, receive a fixed sum for electricity and can't afford energy-saving fridges or washing machines. At the other end of the scale, the owners of well-located houses install solar panels on their roofs and are paid for the privilege. Meanwhile, industrial companies that use a lot of electricity are being given more and more tax breaks. Indeed, the Federal Network Agency has calculated that the country's biggest electricity guzzlers account for 18 percent of overall consumption, but bear only 0.3 percent of the costs associated with the EEG.

Under these conditions, it's hardly surprising that the ballooning costs have triggered a lively political debate. Even so, this is far from the only problem triggered by the rapid expansion of the renewable energy sector, and Altmaier will have to take all of these elements into account before he can present a coherent reform plan.

But while the environment minister was flying to Germany's first offshore wind farm by helicopter, Andreas Wellbrock was issuing dire warnings of an impending crisis.

The monsters Altmaier calls "cathedrals" can also be found in the port of Bremerhaven, where hammers thud against metal pylons and the air smells of the sea. Soon ships will come to transport these immense structures out to their final resting place.

But Wellbrock is worried. The head logistician at BLG Windenergy Logistics is already predicting a "disruption next summer." Owing to delays in laying the power cables connecting wind farms to the mainland, his company has had no new orders for offshore transports since November 17. Without this connection to the national grid, no one wants to risk investing in new wind farms. "We worked flat out for a year," Wellbrock says, "and now we risk grinding to a complete stop."

More than 3,000 people in Bremerhaven work in the offshore wind sector. Several companies have threatened to switch to short-time work if the chaos surrounding the cables isn't sorted out soon. The

environment minister has promised to help. He wants to put a solution to the cabinet this week that would compensate wind-farm operators for losses in earnings owed to a lack of connections. The millions this would cost would once again be passed on to the consumer.

### **Some Projects are Years Behind Schedule**

This compensation scheme is no more than a temporary measure, a stop-gap solution that shows just how uncoordinated Germany's energy revolution is proving to be. Offshore wind farms shouldn't be the only project the government improves through special solutions.

The solar-energy industry, for example, is experiencing such a boom that the number of arrays envisaged to be connected to the grid by 2020 may be achieved as soon as by the end of 2014. However, fluctuations in the amount of electricity generated by solar modules is still putting a strain on the grid. That's why additional land-based power lines need to be installed sooner than anticipated. Unfortunately, in some cases, the expansion of the grid is years behind schedule.

The green-energy boom is also revolutionizing Germany's power plants. Up until recently, most electricity was generated by nuclear and coal-fired plants. Within the old system, they always produced the same amount of electricity. But now this staid behemoth of a system is being shaken to its very core because Germany's politicians have decreed that wind and solar energy must have priority on the grid. As a result, green energy is becoming the new basis of Germany's electricity supply, while the remaining power plants are used merely to overcome bottlenecks. They now only produce electricity when renewable energy can't satisfy the demand or to balance out major fluctuations in solar and wind energy.

Under these circumstances, coal- and gas-fired power plants are having to be more and more flexible, while electricity consumption has to adapt to an ever-changing supply. The hope is that, one day, cold-storage facilities, electric heaters and household appliances will run at full steam whenever lots of energy is available, and that the electricity consumption by millions of such devices will drop when electricity production falls.

Just like the expansion of the country's electricity networks, it was thought the switch-over to such power management would take place over a much longer period. But now the boom in green energy is forcing the system to change far more quickly than planned, and the political framework put in place no longer fits.

The problem is that utilities no longer have any financial incentives to build coal- or gas-fired power plants. Owing to the rise in green energy, utilities have fewer and fewer opportunities to sell their electricity, so they earn less and less. At the same time, the technology for controlling electricity consumption -- so-called "smart grids" -- is still in its infancy. Although suitable equipment is already available, there isn't a market on which to sell them -- or a concept for promoting it.

As a result, many of the projects associated with Germany's energy revolution are developing at the wrong speed and, in the process, spotlighting the glaring lack of government coordination. And it's anybody's guess whether Altmaier's concept can solve this dilemma.

Granted, the rapidly rising proportion of eco-power is the engine powering the energy turn-around as well as driving forward the expansion of the networks and the conversion of the supply system. But, unfortunately, it is moving so rapidly that the costs in the coming years will be far higher than originally planned. To make matters worse, the government is losing control of its ability to steer and coordinate projects, causing them to run awry and costs to keep going up.

Likewise, it's also true that there is little to be gained by slowing the entire process down. On the contrary, the greater the time pressure, the quicker the environment minister, the economics minister, the cabinet, the parliament, the governing coalition and the opposition will reach agreements. Better still, quick reforms give lobbyists far fewer opportunities to water legislation down.

### **Altmaier Could Become a Hero to Consumers**

If he finally manages to rein in the costs, Altmaier could yet become a hero to consumers. However, he could also slow down the entire energy realignment if he reduces the pressure enough to allow political wrangling to drag out the expansion of the networks, the establishment of greater flexibility for power plants and the dawn of smart grids for years.

Altmaier appears to be aware of this. Although he is keeping his cards close to his chest, several ideas for a possible reform of the EEG are making the rounds. One such solution would entail drastically curtailing subsidies so as to make certain plants unattractive in certain regions. Another option would be fostering a kind of regional differentiation that promotes plants in areas where they are especially in demand. The government could also provide targeted support for a specific number of green power plants in a specific region.

The environment minister also has ideas for how to encourage power plants to become more flexible. In the short term, he thinks, he only needs to decide on the construction of two to three gas-fired plants in southern Germany. He says it is strategically wiser not to build too many gas-fired power plants too quickly because they pose an ever-greater competitive threat to flexible coal-fired plants and smart electricity grids. "We don't want to kill the competition between such technologies," he says. "We want to encourage it so that the best, most cost-effective solution prevails."

With this strategy, Altmaier is hoping to bind all the different players into a compromise. He could entice the southern states of Bavaria and Baden-Württemberg with the prospect of acquiring gas-fired power plants, offer offshore wind farms to the northern states of Lower Saxony and Schleswig-Holstein, win the backing of the central state of North Rhine-Westphalia by securing the demands of

its energy-hungry industry, and sell the energy revolution to Germans as the greatest innovation the country has witnessed in decades.

*Translated from the German by Jan Liebelt*

#### **URL:**

- <http://www.spiegel.de/international/germany/problems-prompt-germany-to-rethink-energy-revolution-a-852815.html>

#### **RELATED SPIEGEL ONLINE LINKS:**

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Related Graphs:

## Going All Green

Energy from renewable sources in Germany, in terawatt hours per year

Share of power generation:  
**18 %**

Biomass	31.7
Hydropower	20.4
Wind	43.4
Solar	12.5

**2010**

Share of power generation:  
**66 %**



**2020**

\*according to Basis Scenario 2010 A;  
Source: 2010 pilot study of the DLR, IWES and IFNE

FORECASTS\*

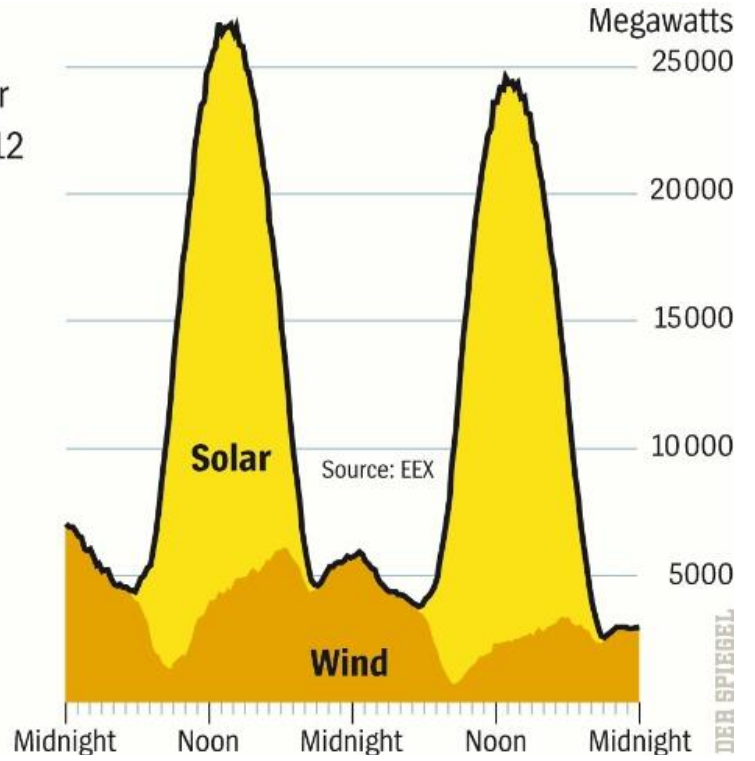
Biomass	56.1
Hydropower	23.5
Wind	182.0
offshore	
on land	
Geothermal	6.6
Solar	57.0
EU Energy Network	35.4

**2030**

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## Fluctuating Output

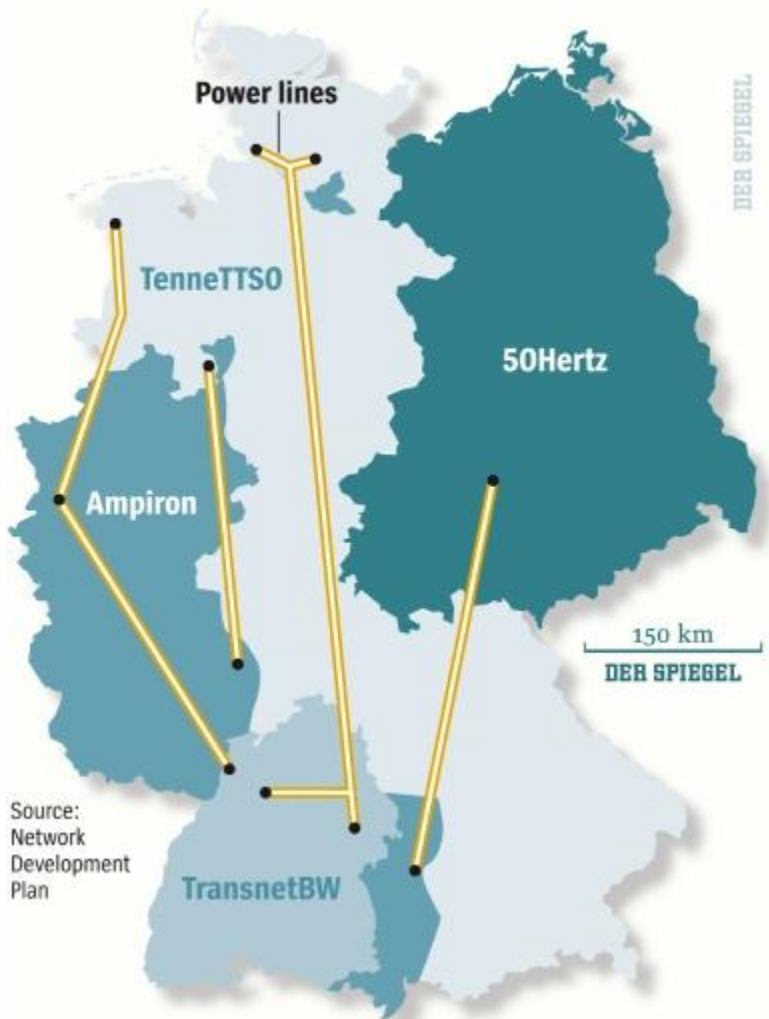
Wind and solar energy fed into the power grid, for example, on May 25 and 26, 2012  
In comparison: Net output of the Brokdorf nuclear power plant: 1,410 megawatts





# Long Lines

Power-grid operators and the planned power-line expansion



Source:  
Network  
Development  
Plan



German Environment Minister Peter Altmeier:

" I have personally greeted almost every wind turbine and solar panel in Germany."

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