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Windmills Overload East Europe's Grid Risking Blackout: Energy

By Ladka Bauerova and Tino Andresen - Oct 25, 2012

Germany is dumping electricity on its unwilling neighbors and by wintertime the feud should come to a head.

Central and Eastern European countries are moving to disconnect their power lines from Germany's during the windiest days. That's when they get flooded with energy, echoing struggles seen from China to Texas over accommodating the world's 200,000 windmills.

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Renewable energy around the world is causing problems because unlike oil it can't be stored, so when generated it must be consumed or risk causing a grid collapse. At times, the glut can be so great that utilities pay consumers to take the power and get rid of it.

"Germany is aware of the problem, but there is not enough political will to solve the problem because it's very costly," Pavel Solc, Czech deputy minister of industry and trade, said in an interview. "So we're forced to make one-sided defensive steps to prevent accidents and destruction."

The power grids in the former communist countries are "stretched to their limits" and face potential blackouts when output surges from wind turbines in northern Germany or on the Baltic Sea, according to Czech grid operator CEPS. The Czechs plan to install security switches near borders by year-end to disconnect from Europe's biggest economy to avoid critical overload.

Wind Farms

The bottleneck is one of many in the last eight years as $460 billion of wind farms were built worldwide on plains, hills and at sea before networks were fully expanded to deliver the power to consumers. Upgrading Germany's system alone to address capacity and technical shortfalls will cost at least 32 billion euros ($42 billion), its four grid operators said in May.

Germany installed more than 8,885 megawatts of wind energy since 2007, mostly in the north. Now it's studying how to build the power backbone to connect to the industrialized south, home to hundreds of factories such as those of chemicals manufacturer Wacker Chemie AG (WCH) and Siemens AG. (SIE) The electricity detours through the Czech Republic and Poland when German cables can't handle the load as the countries' grids are interconnected.

The problem may intensify with the approaching winter. With an insufficient north-south connection, Germany's power network came close to a collapse last February when high winds in the Baltic sea flooded it with power and the Czech Republic and Poland threatened to disconnect their grids. The coming winter can be critical, German Economy Minister Philipp Roesler said last week.

Aging Plants

Chancellor Angela Merkel's decision to shut down aging atomic plants and exit nuclear power by 2022 following last year's reactor meltdowns in Fukushima, Japan, exacerbated the power imbalance. Germany more than ever will have to rely on power generated in the more windy north.

"We do understand that the Czech and the Polish grid operators are concerned about market and system security," Volker Kamm, a spokesman for grid operator 50Hertz Transmission GmbH, said in a phone interview from Berlin. "We are seeking a constructive solution."

Lack of grid connections, such as in China, or oversupply as in Texas have made wind energy's global rollout a lumpy process. Wind farms in West Texas earlier this year were paying utilities to use their electricity on particularly gusty days because they can still earn $22 a megawatt-hour in federal tax credits.

Excess Flows

Utilities like Prague-based CEZ AS (CEZ) and Warsaw-based PGE SA (PGE) are occasionally forced to disconnect some coal-fired plants in the western parts of the Czech Republic and Poland because of excess power flowing from Germany. CEZ's Prunerov plant is often a casualty of the unplanned flows, CEPS said.

"Measures we're using are costly and at times not sufficient," said Jerzy Dudzik, an executive from Poland's grid operator PSE. PGE had to adjust generation schedules at its Dolna Odra and Turow plants, he said.

Both Poland and the Czech Republic are planning to install so-called phase-shifter transformers in the trans-border area with Germany to regulate power flows and protect their transmission networks. While the Czechs are still negotiating with Germany on other short-term solutions and pushing for a creation of smaller power-trading areas with realistic capacity allocation, they're already counting on installing four transformers by 2017, CEPS said.

'Free Lunch'

"The Germans are using our infrastructure in an excessive manner," CEPS board member Zbynek Boldis said in an interview in Prague. "At this point they're getting a free lunch."

Germany's eastern neighbors have also said that the common German-Austrian power market puts them at a disadvantage since they must reduce cross-border transmission capacity because of trades between the two nations and have to take costly measures to protect their grids.

Southern Germany imports power from Austria's pumped- storage hydroelectric power stations in the Alps during peak periods, again using the Czech grid while excluding the Czechs from the benefits of trading within a single-border area.

"Traders within the Austrian-German common zone don't need to bid for capacity in auctions even though they're using up the capacity of its neighbors, who do have to pay," CEPS's Boldis said. "That's discrimination."

The German-Austrian common market's physical transmission capacity doesn't correspond with the volume of transactions between the two countries, so they end up using the Czech, Polish, Slovak and Hungarian grids, Boldis said. The four countries want Germany and Austria to redraw the power-trading map, creating smaller areas that would better reflect electricity flows.

"Electricity follows a path of least resistance in the grid, according to the laws of physics," Boldis said. "The result is that our transmission system is overloaded, we have security threats."

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