

Europe's Image Clashes With Reliance on Coal

Europe will eventually have to go nuclear and throw out Dutch and Swedish greens.

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"In the shadow of two hulking boilers, which spew 10 million tons of carbon dioxide a year into the air, the Swedish owners of this coal-fired power station recently broke ground on what is to be the world's first carbon-free plant fueled by coal. The German chancellor, Angela Merkel, presided over the ceremony.

"We accept the problem of climate change," said Reinhardt Hassa, a senior executive at Vattenfall, which operates the plant. "If we want a future for coal, we have to adopt new technologies. It is not enough just to make incremental improvements."

But the new plant, which will be just a demonstration model, pales next to the eight coal-fired power stations Germany plans to build for commercial use between now and 2011 ~ none of them carbon-free.

"That is really a disappointing track record," said **paid activist** Stephan Singer, the director of climate and energy policy at the World Wide Fund for Nature in Brussels. "Just replacing old coal plants with new coal plants won't enable Germany to meet stricter carbon emission targets."

Europe likes to think of itself as a place that has moved beyond its sooty industrial past, with energy that comes from the windmills that dot the Dutch countryside and the Danish coastline or the carbon-free nuclear plants that dominate France's power industry.

But with oil prices soaring and worries rising about the reliability of gas piped from Russia, Europe must depend heavily on that great industrial-age relic, coal: a cheap, plentiful fuel, but one that emits twice the carbon dioxide of natural gas. Coal-fired plants generated half the power in Germany and Britain during the chilly winter just past.

While Europeans stand out for their commitment to controlling global warming gases, some of their largest energy companies are reluctant to invest in technologies that could further protect the environment, like equipment in the demonstration plant here that will trap carbon dioxide and pump it into underground storage areas. Only a handful of carbon-free plants are planned in the European Union.

There is another downside to coal, evident barely a mile from the plant here. Bulldozers have begun demolishing a 450-year-old mill town, which blocks the path of the open-pit mine that supplies coal to the plant. The last residents are being forced to pack their belongings and abandon their homes for a new settlement nearby.

Such uprooting is an unavoidable cost of Europe's hunger for coal, executives here say. They also say the technology to capture carbon dioxide is too costly, at a time when they are already spending billions of euros to replace Europe's aging power plants. Finding places to store the carbon dioxide is a headache in countries like Germany, which are densely populated and have a history of protesting against the storage of more troublesome pollutants like nuclear waste.

In Europe, where power companies say they have cleaned up the visible pollutants ~ like sulfur dioxide -- from their coal plants more diligently than their American counterparts, some executives are suspicious of current proposals to convert to "clean coal" technology.

They describe them as mainly public relations ploys championed by the Bush administration and American power companies, even as only a few plants that capture and sequester carbon dioxide are actually planned for the United States. They suspect the Americans are trying to circumvent mandatory cuts in carbon emissions and avoid making steady improvements in the efficiency of their plants.

"There's a lot of media-driven talk," said Alfred Tacke, chief executive of Steag, Germany's fifth-largest power generator, which has eight coal plants scattered in the Rhine, Ruhr and Saar regions.

"In the United States, you defer all investments, because in the future maybe you have the perfect solution," said Mr. Tacke, who was deputy economics minister under the previous German chancellor, Gerhard Schröder. "I would prefer a solution that improves the situation now."

By that, Mr. Tacke means using existing technology like raising the temperature or pressure of the steam that turns the turbine, to make conventional coal plants more efficient. Steag is building such a plant in the Ruhr city of Duisburg ~ a \$1 billion project that, he says, will be more efficient than any rival in the United States.

The debate over coal in the European Union has to be seen within the context of the Kyoto Protocol, a global climate-control agreement that commits Germany and 34 other nations to measurable reductions in emissions of carbon dioxide and several other greenhouse gases.

With a legal imperative to cut emissions by up to a fifth within the next six years, power companies here face a clearer challenge than those in non-Kyoto countries, like the United States or China.

Yet while the Kyoto pact has focused minds, environmental advocates say it has not yet pushed companies far enough. In 2005, without any extraordinary effort, emissions of carbon dioxide in Germany, Britain and other countries actually came in below the caps set by national governments in the first phase of the Kyoto process, which runs from 2005 to 2007.

This, critics said, suggests that the reductions were not tough enough; much of the improvements were simply a natural outgrowth of slow economic growth and the closing of outdated coal operations. Britain and Germany both pledged to impose deeper cuts in the next phase, which starts in 2008 and runs through 2012.

"It's true that the first phase of emissions reductions are not that challenging," said **paid activist** Daniel Lashof, deputy director of the climate center at the Natural Resources Defense **Council** in Washington. "Europe can make its targets with only incremental improvements."

Though Europeans are united in their concern about global warming, they have a patchwork of energy policies. Some countries, like Germany and Poland, remain heavily dependent on coal, while others, like France and Finland, are redoubling their

investment in nuclear power. Italy and Spain use a lot of oil and gas, though Italy is converting some oil-fired plants to coal.

The recent spike in the price of oil has thrown the spotlight back on coal, even in places like Britain, where the industry had been in a death spiral for decades. Richard Budge, a longtime British coal executive, has announced plans to reopen a colliery in South Yorkshire. With financing from Russian investors, he also hopes to build a \$1.5 billion power plant on the site, equipped with technology to capture and store carbon dioxide.

After years in disrepute, coal is still struggling for public acceptance in Britain. The government is drafting a new energy policy that is expected to stress windmills and other renewable energy sources.

But economic and geopolitical realities, Mr. Budge said, make a bigger role for coal inevitable. "Wind farms only work one day in three, and nobody knows which day," he said, with only a hint of exaggeration, in a telephone interview.

Coal, he noted, is not a hostage to politics. When Russia abruptly switched off its natural gas pipeline to Ukraine in January over a pricing dispute, gas supplies dwindled all over Western Europe. To Germany and other gas importers, it was a chilling reminder of their vulnerability.

"Fifty-eight percent of the world's gas is owned by Russia, Iran and Qatar," Mr. Budge said. "Coal is on every continent."

Here in eastern Germany, vast deposits of brown coal, also known as lignite, lurk beneath the table-flat countryside. There are similar deposits in the Rhine and Ruhr valleys in the west. Though Germany has been mining in these regions for decades, the supply is far from exhausted.

So great is the demand that the government allows companies to forcibly resettle villages that lie in the path of their excavators. The process is costly and litigious and can take more than a decade.

"This is a very difficult issue for us," Mr. Hassa said, noting that Vattenfall has begun negotiating with 230 residents of a village next to a mine, for a relocation that would not happen until 2018.

Haidemühle, the village being swallowed by the Schwarze Pumpe mine, acquiesced to relocation fairly quietly. Among the few holdouts was Heinz Attula, 84, who said Vattenfall did not pay him enough for his property. But even he was ready to move to a new home provided by the company.

"It's not an easy step," Mr. Attula said, as he walked his dog past deserted houses and a ghostly schoolyard recently. "I've lived my whole life in this town. But I know the mining must go on."

The economic forces are getting harder to resist. Coal is Germany's main generator of electricity, and the government plans to phase out the next largest source, nuclear power, by 2021. Though use of natural gas is growing ~ Germany and Russia are jointly building a pipeline under the Baltic Sea ~ last winter's cut-off left a bad taste in Berlin.

"This really changed the thinking of politicians and economists," said Johannes F. Lambertz, a member of the management board of RWE Power, the No. 1 electricity

generator in Germany and No. 3 in Britain. "People now talk about competitiveness and security together."

Coal is the bedrock of RWE's business, and its strategy illustrates the tension between environmental progress and the status quo. The company is expanding its huge BoA plant in the Rhine valley, which uses brown coal, and it plans a new black, or hard, coal plant, east of the Ruhr valley. Neither, at least initially, will be equipped to capture and store carbon dioxide.

Long viewed as a holdout, RWE recently surprised competitors by announcing its first carbon-free plant, scheduled to go into service in 2014. The \$1.2 billion project would have a capacity of 450 megawatts, more than ten times that of the pilot plant in Schwarze Pumpe.

"We have to be prepared for a scenario in which carbon emission reductions are much greater than today," Mr. Lambertz said in an interview at RWE Power's headquarters in Cologne. "We have to keep all our options open since we face an uncertain future."

With so few details and such a long timetable, critics said the announcement was a public relations maneuver, at a time when the German government is setting the next stage of emissions reduction targets.

"Last year, RWE said it was skeptical about a carbon-free plant before 2015," said Brian Ricketts, a coal industry analyst at the International Energy Agency in Paris. "It's a game between industry and government."

While Europe's longer-term reductions in emissions are still undecided, there is a general agreement that they will have to be radical ~ if only to compensate for the additional greenhouse gases being generated by China and India, to say nothing of the United States.

The plant at Schwarze Pumpe shows how European industry is adapting to this future. Originally built in 1955 by East German Communists, it was equipped with the best technology then available. But it still contributed to East Germany's reputation for horrendous pollution.

The town's name translates as "black pump," and outsiders regularly assume it refers to its pollution record. Actually it stems from a tale that in the Thirty Years' War of the 1600's, townspeople painted their pump black to trick invaders into thinking the water was infected with the plague.

After German reunification in 1990, the government opted to replace the Schwarze Pumpe plant. The new one, opened in 1998, is equipped with filters and scrubbers that reduced sulfur dioxide emissions by 91 percent, nitrogen oxide by 61 percent, and almost completely eliminated dust. Carbon dioxide emissions were reduced only 31 percent, however.

Vattenfall's carbon-free plant will burn the coal in an atmosphere of pure oxygen and recirculated gas. Three quarters of the carbon dioxide produced by the burning is recycled back into the boiler. What remains is pressurized into a liquid-gas mixture and injected underground. Mr. Hassa said it was no accident that a Swedish company was on the vanguard of this effort. "The Swedish philosophy is different than the German philosophy," he said. "Climate change and environmental protection are more deeply rooted in Swedish society than in German society."

Vattenfall concedes it will not be able to produce carbon-free electricity on a large scale until at least 2015. Still, it says it has little choice but to start now. "In the long run," said a spokesman, Martin May, "we'll have to reduce emissions by 60 percent to 70 percent."