

# Growing Doubts in Europe on Future of Carbon Storage

Andres Cala, *New York Times*, 1-18-12

MADRID — The European Union's long-term energy plans to abate global warming while still burning fossil fuels hinge on proposals to capture carbon dioxide emissions and store them in deep underground rock formations. Yet weak support for the untested technology is putting Europe in the rear ranks of its development.

Two carbon capture and storage projects in Germany and Britain were canceled last quarter, and many of the remaining projects will probably share that fate this year, imperiled by a mix of regulatory objections, a lack of money, public opposition to the possible geological risks and broader uncertainty about strategies to slow climate change.

By 2020, Europe will have at most six, and more probably four, of the 12 demonstration plants that were supposed to be running by 2015, experts and officials say.

“The program will deliver four to six projects, tops, and some say that's optimistic,” said Eric Drosin, a spokesman of Zero Emissions Platform, an umbrella group representing private and public partners involved in carbon capture and storage, also known as C.C.S.

Christoph Weber, an expert on low-carbon economy and a professor of management sciences and energy economics at the University of Duisburg-Essen in Germany, said Europe “would have to spend a lot more money than projected initially to get utilities to say that the business is not the best, but worth going for.”

Still, Europe, an early leader in developing the technology for use outside the oil industry — which injects carbon dioxide into aging oil fields to bolster production — remains bound by its climate change targets. Delayed deployment of the technology could make it significantly more expensive to meet a target, agreed on by heads of state in 2009, to cut greenhouse gas emissions at least 80 percent from 1990 levels by 2050. It would also increase dependence on nuclear power, a tall order given Germany's rejection of nuclear energy.

“There is no long-term role for fossil fuels in Europe's future energy mix unless C.C.S. is deployed,” the European Union's energy commissioner, Günther Oettinger, warned last month.

Spain could be a case study of failed ambitions. It is one of Europe's worst laggards in the pursuit of carbon dioxide emission targets, and Spaniards as a whole do not share the concerns voiced in some countries about the geological security of the technology. The country also has mainstream political support for revitalizing its coal industry and a more stable regulatory framework than many of its neighbors.

In 2006 the government set up the Fundación Ciudad de la Energía, known as Ciuden, a research facility in the Bierzo, a mountainous coal mining region of northwestern Spain.

Ciuden was to develop a technology for collecting waste carbon dioxide from the burning of local coal, cooling it to a liquid and pumping it for indefinite storage into underground caves or porous rock formations.

Three years later, along with two private partners, it received a grant for 180 million euros, or \$228 million, to build a pilot plant, to be followed by an industrial-scale plant for completion by 2015.

But the demonstration plant is now unofficially mothballed for lack of committed public and private money. Endesa, one of the biggest utilities in Spain, which was to build a 500-megawatt coal-burning power generator

integrating Ciuden's technology, has said it will not make any formal decision on the project until later this year.

An industry ministry spokesman in Spain's new conservative government said the company had shown little interest in pursuing the program and the government itself had yet to make up its mind what to do.

The former Socialist Party administration, meanwhile, was scarcely more active. Despite the debt crisis, it subsidized the renewable energy industry with nearly 7 billion euros in 2011, most of it directed to solar power, but it provided no more money for the demonstration project.

Adding carbon capture technology to a power plant raises the capital cost by 30 to 100 percent, according to the Global C.C.S. Institute, an Australian government research center created to share global knowledge about the technology. That translates into an average of 1 billion to 2 billion euros, depending on the size of the plant. The technology also makes plants less efficient, reducing power output 20 percent.

Yet the technology continues to enjoy political and financial support in many countries, including Norway, the United States, Australia and Canada, as economies strive to mitigate climate change without sacrificing the reliability and affordability of fossil fuels, especially coal.

The United States has four operational projects, with three more under construction and 18 planned; and Canada has one operational and two under construction, with three awaiting final decisions and three in the planning stage.

The 2050 Energy Roadmap, adopted by the European Commission last month, looks to carbon capture for 19 to 32 percent of total European Union emission cuts by 2050.