

## No future for FutureGen—Perry Sioshani's Letter from America

### Ditto for carbon capture and sequestration?

For some time, the coal industry has pinned its future on a bet that somehow, someone, somewhere will find and master the art of capturing lots of CO<sub>2</sub> from the combustion of coal in power plants and storing it in massive impervious underground reservoirs where they would harmlessly stay for ever. That, in a nutshell, would solve coal's central problem, that it is heavily polluting and thus contributes to climate change on a massive scale.

Yet the search for commercially feasible carbon capture and sequestration (CCS) on a scale that can make a difference has proven daunting, technically as well as financially. As this writer sees it, if you don't want the carbon that comes from coal combustion, you'd better leave it underground, where it was probably intended to remain. *Clean coal* is an oxymoron, as in airline food.

A recent study by the Massachusetts Institute of Technology (MIT) suggested what many experts have been saying all along—that it is not easy to find impervious underground reservoirs to safely store large volumes of CO<sub>2</sub>—even assuming that the CO<sub>2</sub> can be easily captured from coal combustion.

In the US, much hope was placed on a Department of Energy (DOE) project called FutureGen, launched under the Bush administration in 2003, suspended in 2008 and resurrected in 2009 with \$1.1bn funding under Obama administration's stimulus package. Following a number of tumultuous ups and downs, in early

February 2015, the DOE announced that it was, again, pulling the plug from the public-private partnership.

In its latest iteration, the partnership planned to purchase and retrofit a 168 MW coal-fired plant belonging to Ameren Energy Resources near Meredosia, Illinois with the intent to capture at least 90% of its CO<sub>2</sub> emissions to be pumped via a 30-mile pipeline to a storage facility and injected about 4,000 feet below ground into the Mt. Simon reservoir, one of the Illinois' deep underground saline formations.

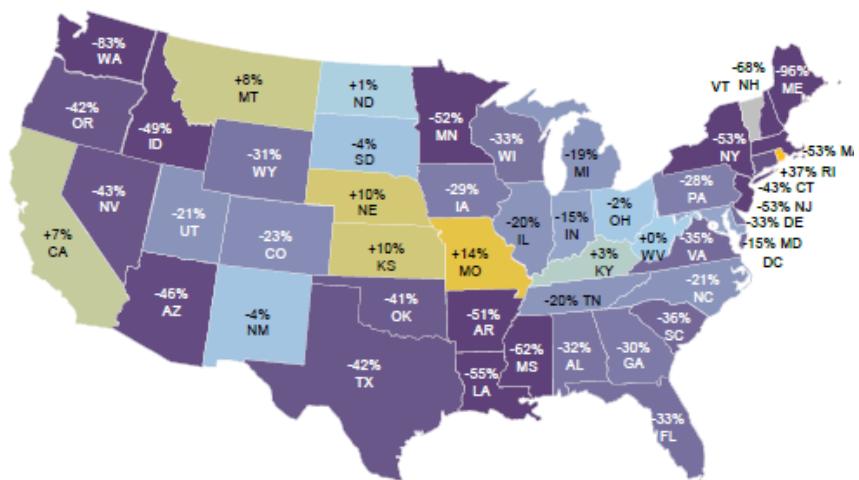
But as project's costs escalated to \$1.7bn, backers were unable to secure additional financing. A last ditch effort by the state of Illinois to put a surcharge on the state's electricity consumers—roughly \$1/month for 20 years—ran into substantial opposition, including that of Exelon, the state's largest power generator and a lawsuit scheduled to be heard by the Illinois Supreme Court later this year.

With about \$200mn of the original funding already spent, the DOE concluded that it was time to cut the losses, stating that the decision was made to "protect taxpayer interests." As a taxpayer, it was good to hear that DOE is concerned.

Many within the US coal lobby and beyond, however, were disappointed—including the American Coalition for Clean Coal Electricity—a misleading oxymoron in the eyes of the US anti-coal lobby. In a statement, Ken Humphreys, CEO of the FutureGen Alliance, said that the group was "profoundly disappointed," adding that the failure of the project "questions US resolve" in supporting the development and deployment of CCS technology. He got that one right.

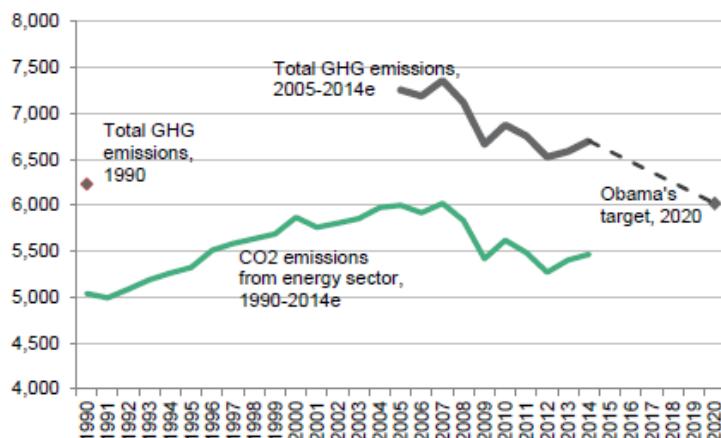
### Coal's nemesis: EPA's Clean Power Plan proposal

#### Changes in power sector emissions by state from 2012-30 under one proposed EPA Clean Power Plan scenario



### US greenhouse gas emissions falling over time

#### US economy-wide emissions (black) and from energy sector (green); 1990-2014 and projections



level standards, why bother with coal, clean or otherwise.

The only good news for CCS enthusiasts has been SaskPower's Boundary Dam Power Station in Saskatchewan, Canada, which began commercial operation in October 2014.

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The DOE's latest move and MIT's report are among the mostly bad news for CCS. As reported in trade press, the estimated costs of the Kemper County integrated gasification combined cycle (IGCC) plant in Mississippi have risen more than 120% over its \$2.8bn budget, yet Mississippi Power was expecting the plant to come online in 2015. That was before a recent court decision that faulted the state regulator for allowing the costs of the project to be recovered from customers while the project was under construction.

Several other US projects including Texas Clean Energy Project and AEP's Mountaineer Power Plant in West Virginia are stalled or have been shelved for lack of funding. With US electricity demand dormant, ample natural gas at competitive prices and the flood of renewable generation due to state









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