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Study: World's 'Peak Coal' Moment Has Arrived

By PATRICK REIS of

Is the world about to begin running out of coal?

Two researchers say so. In a peer-reviewed article published in the journal *Energy*, they write that the world will hit "peak coal" production next year or shortly thereafter, and then mining would begin a long, steep decline.

Bottom line, say the paper's co-authors, Tadeusz Patzek, a University of Texas engineering professor, and Greg Croft, a St. Mary's College of California earth science professor, is that the 7 billion tons of coal the world is now mining and burning each year is about the best it can do.

"Our ability to produce this resource at 8 billion tons per year, in my mind, is a dream," Patzek said.

The pair's prediction is based on the "Hubbert Cycle," the resource-depletion theory that American geophysicist M. King Hubbert used in the 1950s to correctly forecast that U.S. oil production would peak two decades later.

Patzek predicts coal will peak not because supplies are running out but because the remaining deposits are increasingly difficult to mine. Alaska's North Slope, for example, has coal reserves that rival those of the continental United States, but turning that coal into energy would be practically impossible, Patzek argues.

"It would take 10 or 11 of the largest coal terminals on the Earth operating 24-7, 365 to load ships above the Arctic Circle during the polar night," he said.

Russia, China and other energy consumers face similar logistical difficulties with coal, Patzek said.

And while global supplies are set to trail off, the stage is set for demand to spike, Patzek said. U.S. consumers use slightly less than 1 billion tons of coal annually, the Chinese use an estimated 3.5 billion tons, and emerging energy giants like India and Indonesia are hungry for more.

"In the past, any time we demanded something, we got it. Well, this time around, it may be different," Patzek said. "The message of this paper is that we really have to be a little bit smarter and less energy-intensive."

Patzek and Croft's peak-coal prediction is being contradicted by government economists and industry groups.

The federal Energy Information Agency estimates the United States alone has about 260 billion tons of recoverable coal, enough to support current consumption levels for at least two centuries, said George Warholic, an EIA coal economist.

And the National Mining Association said the United States is sitting on enough recoverable coal to power the country for the next 440 years. U.S. coal production dipped last year, but that was not because of a shortage of available reserves, spokeswoman Carol Raulston said.

"We mine based on demand, and when the economy went down, coal production went down by about 9 percent as well," she said.

But as the economy reheats and demand rises, U.S. coal companies will still be sitting on plenty of viable reserves, Raulston said.

A foggy crystal ball?

So how can the two camps be so far apart?

For starters, they are making forecasts using different methodologies. The Hubbert cycle analysis looks at past production trends to predict future results. EIA and the mining trade group prefer to measure current consumption rates against estimated future reserves.

But much of the disparity comes because there are too many variables contributing to coal production to make precise predictions, said Jerry Taylor, a resource economist and senior fellow at the libertarian CATO Institute.

New mining technology could boost production by making previously untouchable reserves cheap to recover, Taylor said. Alternatively, coal production would drop if an influx of cheap oil and natural gas curbed demand, he said.

Taylor noted that three years ago there was a near consensus that natural gas prices were set to spike because recoverable U.S. pools were running low. Then hydraulic fracturing -- a technology that uses liquid injections to unleash gas -- became affordable, and gas prices have fallen by nearly a third since the start of 2010.

"History is fraught with forecasting failure. As a whole, its record is abysmal," Taylor said. "That doesn't mean we shouldn't forecast; you just have to realize these forecasts are extremely difficult to make."

While Patzek and Croft's plug for energy efficiency and rapid development of renewable energy sources please green groups, the environmental community may find some of his team's other conclusions more unsettling.

Namely, they are skeptical about emissions from burning fossil fuels causing catastrophic climate change.

The paper's authors accept the science connecting human greenhouse gas emissions to global warming, but the world's remaining coal "is not enough to really mess up our climate," Croft said.

The remaining accessible fossil fuel stores only contain enough carbon to raise global temperatures by about 0.8 degrees Celsius, said Croft, who funded the study through his University of California, Berkeley, graduate student fellowship.

Croft took aim at projections from the United Nations' Intergovernmental Panel on Climate Change that assume much larger coal supplies. "That 2-degree rise won't happen," Croft said, making reference to a scenario that the U.N. panel said would be a global catastrophe.

Therefore, Croft said, a cap-and-trade law for carbon emissions is unnecessary, and investment in technology to capture carbon from coal-fired power plants is a waste of resources. Instead, policy should focus on incentives for renewable energy and possibly a carbon tax to promote efficiency, he said.

Enviro groups call for action

Environmentalists take issue with that point.

"On some level it's nice to think that maybe the worst-case scenario isn't as likely as some thought, but I would certainly never count on this to protect us from runaway climate change," said Barbara Freese, a senior coal policy analyst for the Union of Concerned Scientists. "We need to be aware of that risk and tackle it head on."

Freese said she could not judge whether the peak-coal prediction was accurate without more analysis but that the study should prompt policymakers to question some of their assumptions about the fossil fuel.

"We spend a lot of time talking about whether we can rely on renewables and efficiency and whether that's practical and affordable, but we've kind of given a pass to coal proponents," she said. "We need to see evidence that we have the economically recoverable reserves."