Greenwire

BUSINESS:

Biofuel-obsessed U.S. seen blowing 'historic opportunity' in nascent green chemical market

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The United States may be losing a major opportunity to be a global leader in the growing market for green chemicals because of its overwhelming policy tilt toward biofuels, industry experts say.

There are big profit margins in renewable chemicals, experts say, as major corporations like Coca-Cola Co. and Wal-Mart Stores Inc. demand cleaner chemicals for their booming efforts to promote being green.

But U.S. policy that has for many years emphasized biofuels and biopower production has yet to catch up with the shift on chemicals that is taking place in the private sector, experts and advocates say. Though the new farm bill includes an incentive for renewable chemicals, other nations appear to be lapping the United States in attracting and nurturing renewable chemical production.

"These companies are going to get incentive packages to build abroad," said Corinne Young, chief advocate at the Renewable Chemicals and Materials Alliance. "The U.S. has a historic opportunity to lead or to lose."

About three-quarters of each barrel of crude oil goes into the production of fuels -- gasoline, diesel and jet fuel -- in a market worth about $400 billion, the Department of Energy found. On the other hand, less than 10 percent of the barrel goes into producing petrochemicals, whose market is nearly as valuable as the fuels market.

That means there's much higher potential short-term value for companies that tap the chemicals market.

"While the fuels market is very large, the values that get created from the carbon that's used in the fuel market are pretty low," said Andy Shafer, executive vice president at Elevance Renewable Sciences Inc., which produces cleaners, degreasers, personal care products and polyurethanes out of plant-based materials.

The list of advanced biofuel companies shifting to green chemicals in the short term is growing.

Among them, Solazyme Inc., which began by making jet fuel from algae oil, is currently focused on cosmetics, nutritionals and other high-value applications of chemicals. Amyris Inc. had eyed renewable diesel and jet fuel but in 2012 announced that it would instead produce chemicals for the cosmetics industry in the short term. After intending to produce both fuels and chemicals, Virent Inc. has narrowed its focus to chemicals used in the making of plastic bottles.

Nationwide, the nascent renewable chemicals industry has the potential to create 19,400 jobs by 2022, energy analyst Nexant Inc. says in a report presented at a conference in Philadelphia last week by the Department of Agriculture. Renewable chemicals could grow from 165,000 metric tons to 3.2 million metric tons during that time period, the report says.

Despite the market potential for renewable chemicals, U.S. policy since the mid-2000s has been largely focused on the lower-value fuels market.

In 2007, the nation passed a renewable fuel standard (RFS) that required refiners to each year blend a certain amount of ethanol and advanced biofuels into gasoline and diesel. Advanced biofuel producers also have access to tax credits, though they're expired at the moment and await congressional action.

The RFS and government incentives for advanced biofuels in the mid- to late 2000s were driven by high oil prices, national security concerns and an effort to address greenhouse gas emissions.

Advanced biofuels were also seen as the next logical step after the establishment of the corn ethanol industry, said Mark Schweiker, a former Republican governor of Pennsylvania and chief relationship officer at Renmatix Inc., a company hoping to produce the sugars that go into renewable chemicals production.

"When you step back and consider the why of that, it made complete sense. Certainly, at this date, I would tip my hat to then-Republican President [George W.] Bush," Schweiker said. "It was really just, in the world of public policy, sometimes it's just best to establish one front and succeed, and not multiple fronts."

But the policies meant that the markets developed differently than they would have based on economics, said Brent Shanks, director of the Center for Biorenewable Chemicals at Iowa State University.

"If this whole biofuels, bio-based area had grown organically, as opposed to a federal drive, it would have developed much differently," Shanks said. "From a strict commercialization perspective, you would have started at the highest-value chemical. There's some market there, and as you learn technology and refine it, you would go to lower-margin products."

Green-chemical companies go abroad

The U.S. focus on biofuels has already driven some renewable chemical producers overseas.

"We would have loved to build that here first, but we were able to move more quickly in Southeast Asia," Shafer said of Elevance's first commercial-scale plant, which was built in Indonesia.

The farm bill that was signed into law in February was a significant step in moving policy toward renewable chemicals, advocates say. For the first time, the bill opened up major USDA biorefinery grant and loan programs to renewable chemical manufacturers.

The policy pendulum that had swung toward biofuels "has begun to swing back with the farm bill," said Young, who helped craft some of the nation's first legislation spurring industrial biotechnology programs.

For BioAmber Inc., a renewable chemical company that sited its first facility in Canada after the government provided the company with more than $30 million in grants and loans, the change in the farm bill has helped make the United States more attractive as it shops locations for a second $350 million commercial plant.

"For companies like us, having access to loan guarantees for big projects makes a lot of sense," said Executive Vice President Mike Hartmann.

Low electricity costs and an abundant agricultural base -- BioAmber uses high-fructose corn syrup as a feedstock for plant-based succinic acid -- also play in the United States' favor, Hartmann said. BioAmber has always been a renewable chemicals company.

"On a head-to-head basis, the logic and economics of biochemical just make a lot more sense," Hartmann said.

Young said renewable chemical companies are still seeking parity in the tax code and are backing legislation filed in both the House and Senate this session that would create a $500 million tax program for the industry in the form of a production tax credit. They're also seeking administrative changes in the Toxic Substances Control Act, through which U.S. EPA currently requires renewable chemical manufacturers to furnish more data than petrochemical producers.

Schweiker, who has been a vocal advocate of the tax credit, said he is sensing progress in Congress in gaining recognition for renewable chemicals, but added that the industry is not counting on having the incentive "anytime soon."

"I think that the broader industry and even folks in D.C. have to see this as a real, achievable outcome," Schweiker said. "I deal with it every day -- 'Isn't this more down the road in five or 10 years?' If you worked in our place every day, you'd see it's just around the corner. This is real and worth your sustained investment."