



China Appears Ready to ‘Incentivize’— But Perhaps Not Subsidize—Ethanol

By Gordon Feller

Fuel ethanol is already used in five provinces in China—and Beijing seems ready to bankroll a nationwide rollout of the renewable fuel. But is a nationwide ethanol blend truly viable for the world’s newest economic power?

China’s oil demands are already the stuff of legend. Urbanization, industrialization and a six-fold increase in private vehicle ownership over a decade have left the country dependent on foreign sources for 40 percent of its oil. This

figure is expected to pass 60 percent in 2010 and 76 percent in 2020 as imports go from 4.6 million to 8.5 million barrels per day.

The price isn’t just financial. The International Energy Authority predicts China will account for 18 percent of global carbon dioxide emissions by 2025, up from 12 percent in 2000.

Beijing is taking action. Measures outlined in the 11th Five-Year Plan for 2006-’10 won’t end the dependency on for-

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The ethanol plant in Jilin province has a capacity of about 180 MMgy.

eign oil and dirty coal, but it should result in wind, water, sunlight and nuclear power keeping the lights on for significantly more people than before. Those same people could also be filling their gas tanks with ethanol fuels. "China needs to import a lot of oil, so the government is looking at alternative fuels," says Christine Pu, energy and chemicals analyst at Deutsche Securities Asia. "The advantage of ethanol is, it's good for the environment."

Launched in 2000, China's fuel ethanol industry is still in its infancy. According to GTZ, a German company that advises on energy management on behalf of the German government, total "bio-alcohol" (as differentiated from synthetic ethanol) production is around 4 million metric tons per year (1.2 billion gallons). Three-fourths quarters of it is edible ethanol and the remainder is fuel ethanol. "At present, it's largely limited to research institutions, and there has yet to be much spillover from the labs into the marketplace," says Frank Haugwitz of GTZ-China.

By the end of 2005, Heilongjiang, Jilin, Liaoning, Henan and Anhui provinces were wholly dependant on E10, with certain regions in Hubei, Shandong, Hebei and Jiangsu following suit. Studies have shown that using E10

reduces carbon dioxide emissions by up to 3.9 percent.

GTZ has calculated that a nationwide rollout of E10 could see fuel ethanol demand reach 8.5 million metric tons (2.6 billion gallons) per year by 2020.

The government appears ready to meet its goal. Four ethanol plants, with production capacities ranging from 200,000 metric tons to 500,000 metric tons per year (60 MMgy to 150 MMgy), are under development. At the Jilin Fuel Ethanol plant, China already possesses one of the world's largest fuel ethanol facilities with a capacity of 600,000 metric tons per year (180 MMgy).

The nation's vice minister of finance said in July that China is committed to a long-term biofuel development program, notes Professor Liu Dehua of Tsinghua University's chemical engineering department, who has been involved in China's fuel ethanol program since its inception.

"By 2020, liquid biofuel production will be 20 million [metric] tons (6 billion gallons) a year, comprising 15 million [metric] tons (4.5 billion gallons) of ethanol and 5 million [metric] tons (1.5 billion gallons) of biodiesel," Liu says.

China has also cast its net wide in search of the key to success with fuel ethanol. Liu has been to Brazil twice—most recently in April, accompanying officials from the National Development and Reform Commission and the Ministry of Science and Technology—to study a system under which all vehicles must run on fuel comprising at least 20 percent ethanol. "China wants to learn from Brazil's experiences in promoting fuel ethanol production and find out what impact using ethanol has on the environment," Liu says. The officials were also keen to see Brazil's flexible fuel vehicles that run on varying combinations of gasoline and ethanol.

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Thirty years ago, Brazil faced some of the energy challenges that now confront China. It imported 75 percent of its oil in 1975 and received a series of economic blows as the price of oil fluctuated during the course of the decade. The development of fuel ethanol has greatly reduced this vulnerability. However, experts warn against viewing the two countries as being at separate points on the same developmental path.

"Brazil used to import a lot of crude oil as China does now," Pu says. "The big difference is that Brazil is a large producer of sugarcane, while China uses corn for its ethanol."

The situation is complicated by the high priority China attaches to food security. If it's a choice between corn for food and corn for ethanol, the food need wins hands down. Three of the four large-scale ethanol facilities under development will

use sugar-based energy crops or sorghum. Not only does this resolve the food-or-energy dilemma, but ethanol can be created more efficiently from these crops.

Based on its extensive work in China's energy economy, Germany's GTZ identified potential planting areas in southern provinces such as Guangdong and Guangxi, where the climate is more conducive to growing sugar and sorghum. "China has multiple choices," Liu explains. "It wants to diversify and can grow corn in the north and sugarcane in the south."

But the mounting pressure being placed on China's deteriorating farmland by the growing food demands of an increasingly affluent population means that land use is a sensitive issue. China will be a net grain exporter this year on the back of bumper crops, but in the long-term, imports will increase. Despite the

food supply pressures, Liu believes farmers will benefit from the fuel ethanol development whether they diversify into sorghum and sugar or stick with corn.

"When the government first started the ethanol program, the price of oil was not high, and the attention given to the pollution situation was not great," Liu says. "The reason ethanol production was important was the impact it would have on farmers' incomes."

For Beijing-based independent energy analyst Jim Brock, fuel ethanol in China can serve as a sort of insurance for growers. In other words, surplus corn that decays before it can be transported elsewhere, or grain that fails to make the grade for human consumption or cattle feed suddenly has an end-use. "There's not really any conflict between food supply and energy supply," Brock says. "In almost all cases, the production value for food is much more. ... It all comes down to having a supply valve so the corn that cannot be used for food is used for energy."

Pu points to a rise in global oil prices, together with oil price liberalization in China and technological improvements in ethanol production, as factors that could drive the fuel ethanol bandwagon onward. It would take a sizeable spike in crude prices to make fuel ethanol truly competitive. Otherwise, it is a question of how much Beijing is willing to spend to find the key to cost-effective ethanol production.

"Is China willing to subsidize ethanol to the extent that it has been in Brazil and the United States?" Brock asks. "My impression is no. The government is willing to 'incentivize,' but not subsidize." **EP**

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