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Biofuels Impact on Food Supply III

Editor's Note: In my last two SJ columns, we looked at the potential and real effects of crop produced biofuels on food prices. In this month's column, we continue to examine those impacts on world food and what the trends may be. Whatever happens in the oil market, the drive for energy independence, which has been the basic justification for huge investments in and subsidies for ethanol production, has already made the industry dependent on high oil prices. Large scale production of biofuel has put tremendous pressure on global grain prices. In the short- and medium-term, ethanol can do little to affect oil consumption, but the diversion of grain from food to fuel has already exerted a widespread and profound ripple effect on various food commodities.

Developments in solar panels and wind farms favored by eco-activist groups have been severely hampered in developing countries by their high initial costs. Nuclear power for developing countries is still viewed with suspicion. Crop-based fuel production has been the main focus of interest in developing as well as developed countries. In the US and European countries ethanol and biodiesel are made from food or inedible crops, including corn, sugarcane, maize, cassava, rapeseed (canola oil), soybeans, and palm oil.

Society is already farming about 37% of the global land area, and already using almost all of the good quality land. It has been reiterated that additional farmland will have to come at the expense of forests and wild species, and is likely to incur heavy penalties in terms of soil erosion, drought risks, and endangered wild species. While there is no past model or evidence to support this thesis, it does have an element of common sense.

Given high oil prices in early 2008 and the heavy dependence of many countries on imported oil, the potential for producing or importing biomass-derived liquid transportation fuels has awakened interest in many developing and industrialized countries.

The supply of feedstocks is crucial to the success of the biofuel strategy. In many countries, like Pakistan, rice and wheat straw is an abundant by-product from rice/wheat cropping system and can serve as a low-cost attractive alternative for production of ethanol. The technologies for converting straw to ethanol have been demonstrated in pilot plants. Converting rice and wheat straw to ethanol has the potential for addressing long term availability of energy resources and improves performance of agriculture sector. The production of biofuels from rice-wheat straw could generate economic and environmental benefits, create additional employment, reduce energy import bills and open up potential export markets. Of course commercial use of rice and wheat straw to produce ethanol faces significant technical and economic challenges. Its success depends largely on the development of an environmentally friendly pretreatment procedure, highly effective enzyme systems for conversion of pretreated wheat straw to fermentable sugars, and an efficient microorganism to convert multiple sugars to ethanol. Pretreatment of any lignocellulosic biomass is crucial before enzymatic saccharification.

The Present World Situation. Developed countries' commitment to biofuels has already raised food costs and even hunger risks for some. The soaring price of staple food is not an isolated phenomenon. According to the United Nations Food and Agriculture Organization (FAO), global food prices rose an incredible 40% in 2007 alone. FAO has announced that 36 countries are in crisis as a result of higher food prices. Record world prices for most staple foods have led to an 18% food price inflation in China, 13% in Indonesia and Pakistan, and 10% or more in Latin America, Russia and India, Wheat has doubled in price, maize is nearly 50% higher than a year ago and rice is 20% more expensive, says the UN.

The Near Future. As I pointed out in my August, 2008 column, according to the U.S. Energy Information Administration's latest projections, global energy consumption will rise by 71% between 2003 and 2030, with demand from developing countries, notably China and India, surpassing that from members of the Organization for Economic Cooperation and Development by 2015.

Conclusion. It seems obvious to this writer that evaluation of alternate sources of energy with special emphasis given to non-organic sources must come sooner rather than later. These sources will need to include existing technology, including prudent use of nuclear power generation. The use of ethanol is, at best a very short term bandage, and at worst is a longer term fiasco. Consider that the energy needed to produce a fuel grade gallon of ethanol is equal to or more than the energy derived from the product. It is also worth noting that the amount of energy in a gallon of ethanol is much less than in a gallon of pure gasoline. This unadvertised fact is the reason why the mileage of vehicles running mixtures of ethanol and gasoline are significantly less than gasoline alone.

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