

Q&A: Biofuel production And Its Economic And Environmental Implications

Contributed by Euromonitor International
Thursday, 05 August 2010

Biofuels are gaining increased attention due to rising oil prices, the need for increased energy security, and concern over climate change.

Biofuel production, however, has contributed to rising food prices, which adversely affects poor people.

In the long term, the key to solving the economic and environmental problems associated with fossil fuels does not solely lie in increased biofuel production but also in measures to reduce energy demand to ensure sustainable economic growth.

* What are biofuels?

* Who are the major producers?

* How do the production and use of biofuels impact consumers and businesses?

* Do biofuels have any disadvantages?

* What is the future of biofuels?

What are biofuels?

Biofuels are a wide range of fuels “ including solid, liquid or gas fuel such as fuelwood, charcoal, bioethanol, biodiesel, biogas (methane) or biohydrogen “ derived from biomass or bio waste.

Since the second half of the 20th century, amid concerns about rising oil prices and greenhouse gas emissions from fossil fuels, the term “biofuel” has largely come to mean bioethanol (also referred to as ethanol) and diesel. Biofuel made from the fermentation of sugar found in grains (e.g. corn, sorghum and wheat), sugar cane, sugar beet and rice among others is called ethanol.

Meanwhile, vegetable oils derived from palm oil, soy bean and rapeseed among other crops are processed to make biodiesel.

Biofuels “ especially ethanol and biodiesel “ are often discussed as a big part of the solution to reducing greenhouse gas emissions from transportation. Unlike petroleum and conventional diesel, burning ethanol and biodiesel does not release sulphur dioxide which is liable for acid rains.

In addition, the carbon cycle, in which biofuel crops absorb carbon dioxide from the atmosphere that offsets emissions during fuel consumption, means that biofuels are essentially carbon neutral.

Who are the major producers?

The USA and Brazil are by far the world's largest producers of biofuels, followed by Germany, France and China. In 2009, global ethanol production stood at 30.1 billion tonnes of oil equivalent, of which corn-based US ethanol and sugarcane-based Brazilian ethanol accounted for 87.8%.

Meanwhile, Europe is the leading producer of biodiesel, although global biodiesel output is smaller than ethanol output. In 2009, global biodiesel production stood at 13.4 billion tonnes of oil equivalent, of which the EU accounted for 68.8%.

How do the production and use of biofuels impact consumers and businesses?

Biofuels have led to a transformation in the automotive industry. Automakers are making a greater number of flex-fuel cars that allow consumers to switch between cleaner E85 (a mixture of 85% ethanol and 15% petrol) and petrol.

This is beneficial to consumers because they can choose a fuel depending not only on their preference but also on whichever fuel is cheaper.

The production of biofuels has also developed new markets for agricultural produce and hence increased incomes for farmers. This helps generate jobs for the rural economy, and in some countries even revive the agricultural sector.

On the other hand, however, higher demand for food crops to use as input for the biofuel industry is not good news for

the consumer who will face increased food bills.

For oil-importing economies, biofuels reduce the reliance on imported fuels and thus helps to enhance energy security. For many oil-importing countries, especially major emerging economies such as China and India where energy demand has soared to keep up economic growth, biofuel production can improve their trade balance and save hard currencies.

Do biofuels have any disadvantages?

As countries set aside more corn and other agricultural products for use as fuel, fewer crops are available to produce food and, subsequently, global food prices increase.

The cost of food has been rising steadily since 2000. In 2009, despite the fact that world food prices eased from the peak reached in 2007-08 as a result of the global recession, consumer food prices remained well above their 2007 levels.

High food prices deeply affect the poor, who typically spend up to 80% of their household income on food. In addition, rising food prices can lead to food riots as seen in many developing countries including Bangladesh, Haiti, Indonesia and Egypt, which in turn increase the risks of doing business in those countries.

There are also a number of other concerns about the downsides of large-scale ethanol production, depending on the technology used and production methods. For example, extensive monoculture biofuel production could affect agricultural biodiversity.

Many crops used in the biofuel industry are also highly water intensive which could stress water resources. There are also concerns about deforestation, as in the case of Brazil where ethanol production is said to accelerate deforestation.

What is the future of biofuels?

The future of biofuels depends largely on the price of oil, government policies, and technological developments:

* Many industrialised countries have set increasingly higher targets for the use of biofuels. For example, Europe has mandated that biofuels make up 10.0% of its total transport fuel by 2020 whilst the USA has passed legislation requiring that the country's corn-based ethanol production increase by 2.3 billion to 7.5 billion gallons per year by 2012;

* In terms of technology development, second generation biofuels have been developed although they are not yet commercially viable. Unlike ethanol and biodiesel, which are produced from crops grown specifically for the purpose of biofuel production and are thus considered first generation, second generation biofuels have the potential to increase energy yields and reduce environmental impacts significantly.

Second generation production involves using waste materials and transforming it into oil products through different processes such as gasification, which involves the combustion of materials in the absence of oxygen;

* In the long term, the key to solving all of the economic and environmental problems associated with fossil fuels does not solely lie in the increased production of biofuels. Measures that reduce the overall demand for energy to ensure sustainable economic growth are also necessary.

by the Countries and Consumers Team.

For further related articles, please visit Euromonitor International .

20 July 2010