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US and EU Trade in Biofuels:
Policies, Goals, Status and Impacts

Developing World Perspective in Biofuels Trade, Investment and Technology Change

Sergio C. Trindade
SE^{2}T International, Ltd.
strindade@alum.mit.edu

Biofuels must be traded internationally

The first notion I would like to impregnate you this afternoon is that all commercial energy is traded internationally as international commodities. A corollary of this notion is that all commercial energy commodities enjoy futures and options markets where risks can be managed and mitigated and price discovery exist.

Consequently, if biofuels are not traded internationally on a steady basis and do not enjoy active futures and options markets, they will remain curiosities subject to ocasional transactions but they would definitely not be energy commodities.

The message here is that the global sustainability of biofuels requires that they be traded internationally as all other energy commodities.

Currently, there are four fuel ethanol futures and options contracts in the world, in early stages of implementation, and none of them is doing particularly well. This is due to a host of reasons, which translate into a lack of liquidity, too few contracts, too little speculation. Nevertheless, the exchanges are responding to this situation, with the New York Board of Trade's ethanol committee in the process of revising their pioneering contract, which was launched on 7th. May 2001. The original NYBoT ethanol contract was correlated with their open market sugar contract, but may migrate to some other reference in the fuels market.

Regarding biodiesel, I am not aware of the existence of any specific futures and options contract, but I am sure they can find proxy contracts in their precursors, the vegetable oils markets. On the other hand the international trade in biodiesel is rather small presently. However it is bound to grow substantially over the next 5-10 years, as the EU fully implements its biofuels transportation directive, the US expands its consumption and Southeast Asia increases output over and above domestic consumption.

The birth and growth of biofuels program

There is no exception to the global rule that the birth of biofuels programs on a national scale has depended on subsidies and/or mandates. This approach removes market and price uncertainties that investors need to feel confident about recovering their investment in biofuels projects. The wisdom here lies, in my view, in setting up sunset target dates for removing these market interventions to encourage technology driven efficiency improvement that lowers cost and promotes competitiveness of biofuels in the fuels markets. In other words, there is a need to expedite the learning curve in biofuels development that, with increased scales of production and consumption, will substantially lower the costs of biofuels. A good example of such learning curve is the impressive cost reduction of sugar cane based fuel ethanol made in Brazil. By 2002 the cost of making ethanol in Brazil crossed the spot price of gasoline in Rotterdam. And today fuel ethanol made in Brazil competes with gasoline, for any price of the crude oil barrel above $35 or so. Since the mid 90's there is no direct subsidy to ethanol making in Brazil.

The US and Thailand are also cases in point in learning curve development. There are trade offs between technology and subsidies. The sooner market interventtions are phased out the better, to let market forces to decide the future course and the geography of biofuels production.

International trade of biofuels

At some 45 million m^3/yr output, global ethanol production is about 4 times larger than biodiesel. However the present rate of growth of biodiesel is larger than the fast growth rate of ethanol. By 2020, ethanol should be a 120 million m^3/yr industry, whereas biodiesel could reach the level of 50 million m^3/yr. Volume wise, there are some 6 barrels in one m^3.

The immediate term biofuels trade flows will reflect the fact that, by and large, the US is a gasoline economy, whereas the EU is a diesel economy. This translates into a flow of fuel ethanol from Brazil and other producing countries in the Western Hemisphere and possibly some from Asia and Australia into the US and Japan. Regarding biodiesel, this suggests that biodiesel would flow from SE Asia to the EU and Japan, grosso modo.

I have helped frame the international trade policy of Brazil for fuel ethanol back in 2000/2001. This policy remains in place, despite changes in the Brazilian Administration. In a nut shell, this policy encourages Brazil to become a promoter of developing large domestic markets for fuel ethanol throughout the world, wherever it makes sense. And in doing so, Brazil should partner with the US, as both countries share a especial responsibility derived form their overwhelming dominance of the market. The implementation of such policy should establish a sustainable basis for trade, unimpeded trade.

World biodiesel markets and Indonesia

Today, the world biodiesel market is dominated by the EU, which enjoys the same level of market share that Brazil and the US have jointly achieved for fuel ethanol, in the vicinity of 90%. And, within the EU, Germany is the dominant player, followed by France, Italy, Spain and the UK. The primary source of biodiesel in the EU is rapeseed oil, whereas in the Western Hemisphere it is soybean oil. But, It seems the future growth of biodiesel points to tropical oil bearing plants, such as the well know Oil Palm and the newcomer into the oil business – Jatropha Curcas and Asia and Africa are preferred geographies for thi expansion.

The precursors of biodiesels - vegetables oils: palm oil, soybean oil, rapeseed oil, castor oil, etc. - are internationally traded commodities, whose price in the market place reflects their perceived value in various applications. Thus, coconut oil, with its high content of lauric fatty acid typically fetches the highest prices. Rapeseed, soy and palm follow in this order. In January 2007, the prices of the latter three commodities were, respectively, the following, in FOB $/ton: 850, 609 and 540.

The domestic markets for biodiesel in SE Asia and Australia are very small presently. However they are expected to grow very fast in the next 2-5 years, as shown below:

Country	Domestic Market, thousand tons/yr	
	2005/2006	2007/2008
Indonesia	**200**	**2,000**
Malaysia	300	1,500
Singapore	250	1,000
Australia	250	400
Philippines	100	250

Indonesia and Malaysia are the largest world producers of palm oil at a level of 17 million tons/yr each. Both have plans to expand acreage to increase palm oil output in response to biodiesel demand. In the longer term, other regions of the tropical world offer prospects for competitive palm oil supply for biodiesel making, especially in Africa, where the plant originates.

As with all human activities, there are environmental impacts to be wary of. In the case of Indonesia, such impacts relate to the destruction of the natural habitats of species in Sumatra and Kalimantan, such as the Sumatran tiger, the orangutan, the elephant and the rhinoceros. Responding to these concerns, in Indonesia and elsewhere, a Roundtable on

Sustainable Palm Oil – RSPO has been created and has promoted a number of roundtable meetings since August 2003. This is a positive initiative, which should be stimulated and considered for other biofuels feedstocks for both biodiesel and fuel ethanol. And, for fossil fuels as well.

Food versus fuel and the sustainability of biofuels

From the eighteenth century, when coal began to replace wood as an energy source, humankind energy needs have been satisfied by a combination of sources. The menu today is dominated by oil, but soon natural gas will take over. Coal remains important. Biomass and other renewables and nuclear are the residual sources. Biofuels have a role to play in stretching the life of the world's current energy supply. But, given the enormity of the energy market, they cannot be expected to replace the totality of the liquid fossil fuels supplies at any point in time. They will however play a role in the transition towards whatever energy future will materialize in the long term.

Today the biofuels, ethanol and biodiesel, derive from food or feed related crops. There is concern over the competition for land, water, fertilizers, agricultural management skills and capital between food/feed and energy markets. On the other hand, the development of crops for fuel could help strengthen food/feed production due to increase in agricultural knowledge, yields and crop rotation. But, on the other hand, there are physical limits to the expansion of fuel crops. The longer term solution to this dilemma lies in de-linking fuel crops from food crops, by switching biofuels feedstocks to cellulosic raw materials found in crop residues, forest residues, urban wastes, industrial wastes and even planted celullosics crops. This is the course towards sustainable supplies of biofuels over a long period of time.

Systematization of stakeholders' processes that occur naturally in national societies would help achieve sustainability of biofuels. Such stakeholders' processes and dialogues provide platforms for all relevant and concerned voices of society to be heard. Consensus about courses of action to implement biofuels programs at national level would go a long way to promote sustainability. But, it must be remembered that once consensus has been achieved among the key stakeholders, it will not last forever and will have to revisited from time to time as the overall environment changes at national and international levels.