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*Serving the World of Sugar*

## AGFLATION !



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President, IAPSIT

The years 2007–08 witnessed a dramatic increase in world food price, bringing a state of global crisis and causing socio-political and economical instability across the globe. The impact was more visible on the developing countries compared to developed ones. Initial causes of the price spike included unseasonable droughts in grain producing nations and spiraling oil prices which further heightened the costs of agricultural inputs, food, transport and industrial agriculture. Besides, increasing use of bio-fuels in developed countries, changes in dietary pattern among the communities and falling world food stockpiles have all contributed to the dramatic world-wide rise in food prices. Long-term causes may include structural changes in trade and agricultural production, agricultural price supports and subsidies in developed nations, diversions of food commodities to high input foods and fuel, commodity market speculation, and climate change.

One systemic cause for the current price rise is held to be the diversion of food crops for making first-generation biofuels. According to an estimate over 100 million tonnes of grain per year are being redirected from food to bio-fuel. The impact of “Agflation” has resulted in less food available for human consumption, especially in developing and least developed countries, where a family’s daily allowances for food purchases are extremely limited and this is a serious concern for the scientists, economists and planners. In this regard, Brazil, the world’s second largest producer of ethanol has shown a unique way by sustaining its bio-fuel economy through judicious use of sugarcane and its government claims that Brazil’s sugar cane based ethanol industry has not contributed to the current food crises. The sugarcane based fuel ethanol program of Brazil is a glaring example of judicious utilization of resources without jeopardizing food and grain-crop production. In view of the obvious dangers of diverting food crops for fuel purposes, energy rich sugar crops and their biomass should be exploited for green fuel production. At the world level currently, it is estimated that about 15 per cent of sugar crops are converted into ethanol rather than sugar and this is a silver lining for the contemporary sugar industry of many developing countries. It is imperative to develop low cost agrotechnology where sugar crops could be raised on marginal lands unsuited for food crops. Such an economy based on renewable resources like sugar crops and their biomass will certainly supplement energy and material production from fossil resources, and offer strong possibility of displacing the use of petroleum, while having positive impacts on the environment and economies. The IAPSIT is playing key role in profitable and sustainable development of the sugar and integrated industries in developing countries through sharing of scientific knowledge and technological advancement. The organization of 3<sup>rd</sup> international conference in Al Arish, Egypt is another positive step in this direction and I hope that your participation and research contributions will immensely benefit “lesser privileged communities” of developing nations already facing serious threats of malnutrition and hunger. We wish you all a very happy stay in Al Arish and an exciting trip to Egypt.

**Yang-Rui Li**

*Towards a Sweeter and Prosperous Tomorrow*

**Sugarcane Revolutionizing the Transport Sector in Brazil**

Brazil used to be one of the countries most dependent on oil imports in the world. The first petroleum shock in 1973 served as a catalyst for Brazil to inaugurate in 1975 the world's most ambitious project of substituting petroleum-based fuels for car engines. The project that was called Proalcool - National Ethanol Program - had the goal of reducing foreign dependency on petroleum.

Brazil utilizes mainly roadway transport since it does not possess significant railway system. The transportation sector, for which 80% of the fuels consumed had to be imported at that time, played a vital part in Brazil's foreign trade balance that was in big deficit. In the early 1980s, Brazil had the largest foreign debt compared to other countries in the so-called Third World and the oil imports made the situation even worse. The development of an alternative fuel produced domestically became fundamental for the Brazilian economy's survival.

a total investment of US\$ 11.7 billions since its start, the country gained, through substitution of petroleum imports, a savings of approximately US\$ 38 billions by the end of the century .

The success of the Proalcool program, the first projected biofuel program of this kind, had its merit of employing dynamic governmental policies, which included:

- (1) Providing subsidies to increase sugarcane production and mill/distillery establishment to increase the production base, including incentives for research and development in both agricultural and industrial areas;
- (2) Ensuring a guaranteed price for all ethanol produced by cross subsidization from sales of gasoline and diesel;
- (3) Ensuring a subsidized price for fuel ethanol, the hydrous alcohol, by keeping its price at 59% of the

**Table 1: Impacts of oil price surge in Brazil**

	Year	Oil Price US\$/ barrel	Reason	Energy Source	Number of Vehicles	Oil Consumption (barrels/day)	Oil Production (barrels/day)
<b>1st Impact</b>	1973 - 1974	4.31 → 10.11	Reduced world oil production	Oil: 45.6%	3.5 million (100% gasoline vehicles)	844 thousand	174 thousand (21%)
<b>2nd Impact</b>	1979 - 1980	15.85 → 39.50	Reduced world oil production	Oil: 50.4%	9.1 million (100% gasoline vehicles)	1,231 million	172 thousand (14%)
<b>3rd Impact</b>	2008 ~	147 (09/07/08)	Increased world oil consumption	Oil: 36.7% Ethanol: 16%	20.7 million (33% alcohol and all gasoline contains 25% alcohol)	1,751 million	1,727 thousand (99%)

Brazilian biofuel program's first target was to reach the production of 3 billion liters of ethanol by 1980. Before this, the production in 1974 -75 was a mere 625 million liters. To attract the business people involved in sugarcane production and processing, the government used specific policies such as: financial loans that would cover up to 80% of the investment needed for sugarcane distilleries and the agricultural sector received loans with up to 100% of the budget value. The production goal was then stepped up to 7.7 billion liters for the next 5 years when the second petroleum shock occurred. Proalcool program was extremely important from an economic perspective. With

gasoline price, so the consumers were attracted to using this fuel;

- (4) Incentives were given to car manufacturers to develop engines for hydrous alcohol;
- (5) Alcohol car owners also received incentives by tax exemptions.

All these policies made the program a tremendous success. In just a few years, cars running on ethanol represented 90% of the sales in the market of new cars. Although there was a crisis that started in 1989, which made the program to be shut down, the sector had

established a solid base that made ethanol competitive with oil. The end of Proalcool program drove the sugarcane industry to invest more in modernization. Although several mills/distilleries had to close their operations due to the crisis that came over the sector at the time, the companies that survived are celebrating today the fruit of their perseverance. Today, no more government subsidies are received by the sugarcane industry.

Today, Brazil has become economically independent of imported fossil fuel. All of the gasoline used is mixed with 20-25% of anhydrous ethanol and all gas stations in Brazil are also selling 100% hydrous ethanol as fuel alcohol. Practically all the cars sold today are flex fuel automobiles, which can use either gasoline or alcohol or any mixture of these two types of fuels. Ethanol produced in Brazil has the world's lowest cost. It is the second largest but it is the most efficient biofuel program in the world.

Following the success of the bioethanol program, Brazil is now developing its second biofuel program, the

biodiesel project. Sugarcane again may play an important role. Besides using ethanol as part of the processing ingredient for biodiesel production, the country has started to test producing 100% biodiesel directly from sugarcane. Thus, this might make Brazil the only country in the world using sugarcane to fulfill its total consumption in transportation sector.

As part of an agro-energy process, sugarcane biofuel program depends on sunlight, land and water. Brazil has the advantage on all these. Sugarcane has revolutionized the transportation sector in Brazil and should be used as a trendsetter for other countries, especially developing nations.

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## HIGHLIGHTS

### IAPSIT : Pressing Forward

#### VISION

The vision of the IAPSIT is “holistic development of sugar and integrated industries in developing countries through exchanges of scientific knowledge and technology applications”.

#### MISSION

The IAPSIT is committed to “profitable and sustainable development of the sugar and integrated industries in developing countries encompassing agricultural, industrial, environmental and socio-economic concerns through sharing of scientific knowledge and technological advancement”.

#### OBJECTIVES

- a. To bring together professionals and organizations related to sugar crops research, production, processing, and energy, socio-economic and environmental issues.
- b. To facilitate linkages and a network among members, scientific organizations and non-government organizations to disseminate up-to-date and relevant technology/information needed for the sugar industries through organizing specialized workshops,

- c. seminars, meetings and the exchange of professionals.
- c. To identify a host country and extend technical support in organizing the IS every two years. The IAPSIT Secretariat will approach the government, sugar industry and integrated organizations of the host country to obtain sponsorship for such a symposium.
- d. To publish a newsletter as part of the *Sugar Tech* journal, highlighting sugar and integrated industries news from across the developing sugar-producing countries, technological updates, scientific meetings, workshops and other relevant environmental and socio-economic issues. *Sugar Tech* journal will be the official publication of IAPSIT.
- e. To support research and development projects and extend services in the environmental and social welfare activities, especially in the areas and communities supported by the sugar industry and to assist in relief work in times of need.
- f. To provide a base for the affiliation with/ and of international, national or local relevant societies of sugar crops with the IAPSIT.
- g. To support the regional and national offices in other countries.

