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BRAZIL BIOENERGETIC POWER: IS IT POSSIBLE?

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The oil, in the last century, "reigned" as the main international energy matrix, in particular for motor vehicles. Currently the world undergoes transformations in relation to this question, as a result of hostile scenario to pitched for the oil market, with high prices, predictions of scarcity and the need for reducing the burning of fossil fuels causes the "greenhouse effect", which promotes global warming.

Have opened up in recent years, significant space for the expansion of a strong market for alternative energy sources, with emphasis on biofuels and, in particular, ethanol and biodiesel, considerably less pollutants. In 2010, the global demand for ethanol, for example, amounted to about 1 million barrels per day In 2035, from 3.4 million barrels. The increase must come from different countries. In the USA, the volume will increase to 600 thousand barrels to 1.4 million per day. Europe, which consumed virtually no ethanol, will need about 200 thousand barrels over the next three decades (BOTELHO; HERNANDEZ, 2008).

Total anthropogenic emissions (resulting from human action), in 2011, associated with the Brazilian energy matrix has reached 395.8 MtCO2 while all-eq. the majority of this amount (192.0 MtCO2 while all-eq) generated in the transport sector. The carbon intensity of the Brazilian economy, in 2011, was 0.16 kg CO2/\$, which means that, on average, our economy is about 2.0 times less carbon intensive than the USA economy, 1.4 times less than the European economy, and 2.8 times less than the Chinese economy (BRASIL, 2012).

In that context, Brazil stands out, with ethanol, in a very advantageous position, because it was a pioneer in the field of technology, with the creation of the Proálcool, in 1975, and putting up today in the position of second largest producer and leading exporter of ethanol in the world. According to EPE-energy research company, of the Ministry of Mines and Energy in its energy balance of Brazil -2012, total energy supply was 272.3 million tonnes of oil equivalent (Mtoe), with the participation of renewable energies in electricity production in the country, increased 2.5% in 2011, reaching 88.8%. However, the competition between international prices of sugar and ethanol in Brazil, always has control of the supply of this fuel in Brazil.

The sugar industry is the largest segment of meaning in the production of ethanol. They are 193 plants responsible for milling and processing of 560.29 million tons of sugar cane produced in 2011, which generated 22.73 billion liters of alcohol and 35.97 million tons of sugar (MAP, 2012). The areas of sugar cane production are concentrated in four regions: 1) the largest area is in the State of São Paulo and its surroundings; 2) the second most important area lies on the Northeastern forest Area; 3) the municipality of Campos in Rio de Janeiro; 4) a recent expansion zone is located in the Midwest region, in areas of Cerrado.

The Northeast and the municipality of Campos have limited expansion capabilities, due to climatic and edaphic conditions and restrictions. In this context, the region of greatest likelihood of expansion is the São Paulo, followed by the Midwest. And Amazon? The Agro-Ecological Zoning of sugarcane, which establishes the bases for the production of sugar and ethanol, and provides technical support for the formulation of public policies in the sector, was conducted by Embrapa, and approved by Decree No. 9/17/2009 of 6,961. This zoning were excluded, without any major technical justifications, the Amazon and the Pantanal biomes. Apart from the political interests, all technical experts in this culture knows that the region offers conditions more favorable than for the production of sugar cane.

Already the setting for biodiesel is not as favorable. Brazil is the main competitor to the European Union, which was holding a hegemonic position, accounting for more than 70% of biodiesel produced in the world, led by Germany and France. In 2012, Brazil should become the world's largest producer of biodiesel with the production of 2.6 billion cubic meters (GLOBO RURAL, 2011). On the other hand, the strong subsidies that the European countries and the USA offer to their producers is something scary, besides the Brazilian ethanol tariff limitations from the USA (white, 2009). In Brazil, the sector has been developing mainly in the State of São Paulo, in the State of Goiás and Minas Gerais, which have been established as regions poles and rely on new power projects. From 2010, the State of Pará began his participation, as future biodiesel production pole, from the launch of the national program for production of palm oil.

According to the ecological zoning, production and management for oil palm cultivation in the Amazon, held by Embrapa, the Amazon region presents 29.65 million hectares suitable for oil palm cultivation, or 5.8% of the region. In this total are excluded indigenous areas, environmental protection areas and areas not cleared. There are three types of classes (Preferential, Regular and Marginal) covering all the States of the region (RAMALHO FILHO, 2010).

Another important point to be considered is the high cost involved in the reaction of transesterification, the chemical process used to produce biodiesel from vegetable fats. This process requires alcohol, a strong base (for example, caustic soda) that gives you a high cost of R \$ 40,00 per litre of biodiesel. In addition, there is the production of large amounts of Glycerin far beyond the demand for their industrial use (IPEA, 2012).

However, other aspects deserve attention. The world doesn't know a world market of biofuels for a basic reason: still there are few players in this market. Requires that more countries, in addition to current producers, from entering this market for ethanol and other biofuels become commodity recognized by consumer countries.

To some experts, it is necessary that each country establishes its investment strategy in this area. In Brazil, one of them has been siding with the other potential producers and consumers. In this sense, the country has been developing strategies for the expansion of new markets. In North America has signed agreements for the production of ethanol in the Caribbean and in Central America. In Africa, together with Europe, the Sub-Saharan countries aimed at Brazil, since they are considered important spaces for the production of sugar cane. The Asian countries are also among the strategic markets, considered by Apex-Brazil (Brazilian export and investment Agency), since this region is rich in oil.

Hope this is behavior of several countries in establishing alcohol-gasoline mixture. Is a mechanism that has been bringing positive results in the consolidation of a global market for biofuels, and inevitably will increase the global demand of the product.

One aspect that has taken the field in discussion of biofuels is the "clash" between the production of food versus bioenergy production. The light of the economic theory that issue arises between the antimalthusianists and the new malthusians, shock of demand or supply shock? Or both, simultaneously, resulting in a near future world chaos? Food prices have been rising since 2003, with acceleration from 2005 until today, possibly resulting from the improvement of the living standards of the Chinese and Indians, as well as become the food a great investment in a world in crisis (SARDENBERG, 2008).

Never mind the divergence between these chains, the fact is that we are facing an alert, a yellow light signaling that there should be a worldwide concern, in this case Brazil is a major player in research and in the production of food and energy – facing a reality of finite assets (land and water). Will be most useful in this confrontation if it is nourished by the scientific knowledge that is conducive to obtain the best gains in both areas vital for humanity.

In this perspective it is observed that a new "Green Revolution" may be on the way, no longer concerned only with agricultural productivity, but with significant gains in productivity and balance agrisilvipastoral integration with environmental sustainability, in order to alleviate hunger, control global warming and seek universal peace.

Given this new challenge comes to mind reflection of John Boyd Orr, first Director General of the FAO, and Nobel Peace Laureate, quoted by Norman Bourlaug (2004), leader of the green revolution and the Nobel Peace Prize too: "you cannot have peace when the stomach is empty and where there is a lot of misery".

As already mentioned, the biofuel market is a new segment that requires balance and serenity in the treatment of barriers that naturally rise to. Among these issues we must resolve to prioritize the issue of food and biofuel production at competitive prices, to fetch up to sustainability. By following these premises, it is possible for the country to become a bio-energetic power. Already is in agricultural production and forestry. The country has land availability, abundant sunlight, manpower, technology and a cast of entrepreneurs with vast experience in agribusiness, what qualifies you to participate in this challenge.

However, in order to consolidate this leadership must continue contributing actively in the technical and political debate, making proposals and initiatives aimed at overcoming the obstacles that present themselves each moment. According to white, 2009 among the top positions and propositions of Brazil are: encouraging the adoption of biofuels in the energy matrix of the countries; the stimulus for national investment attraction and of Foreign Affairs in the country; the adoption of an international technical standard that has basic features uniforms to their composition; the establishment of a hybrid public-private national organization to represent both internally and externally the interests of the sector and the adoption of a technical-environmental seal in the country according to rules created by international certification bodies, guaranteed of their quality and rigor in relation to the environment and labor issues.

REFERENCES

BOTELHO FILHO, F. B. e HERNADEZ, D. I. M. **O mercado internacional de biocombustíveis:** etanol e biodiesel. XLVI Congresso da Sociedade Brasileira de Economia Administração e Sociologia Rural. Rio Branco: SOBER, 2008.

BOURLAUG, N. E. **Da revolução verde à revolução dos genes:** nosso desafio no século 21. Palestra proferida no São Nobre da ESALQ/USP, em fevereiro de 2004.

BRANCO, L. G. B. **Biocombustíveis brasileiros e o mercado internacional:** Desafios e oportunidades. Revista CEJ, Brasília, Ano XIII, n. 46, p. 39-48, jul./set. 2009.

BRASIL. Empresa de Pesquisa Energética. **Balanço Energético Nacional 2012. Ano base 2011:** Resultados Preliminares. Rio de Janeiro: EPE, 2012. 51 p.

_____MME. Matriz Energética Nacional 2030. Brasília: MME/EPE, 2007. 254 p.

_____. MAPA. **Plano Anual de Agroenergia 2006/2012.** Embrapa Informação Tecnológica. Brasília: MAPA/Embrapa, 2006. 110 p.

______. Análise Comparativa do Desempenho das Safras de Cana de Açúcar 2012/2013 e 2011/2012 - Dados Acumulados. Brasília, 2012.

GLOBO RURAL. Brasil será maior produtor de biodiesel em 2012. Revista Globo Rural de 15/11/2011

IPEA. Biodiesel no Brasil: desafios das políticas públicas para a dinamização da produção. Comunicados do IPEA, Nº 137. Rio de Janeiro: IPEA, 2012.

RAMALHO FILHO, A. Zoneamento Agroecológico, Produção e Manejo para a Cultura da Palma de Óleo na Amazônia. Rio de Janeiro: Embrapa Solos, 2010. 216 p.

SARDENBERG, C. A. Alimentos e o fim do mundo. O Estado de S. Paulo, 24/4/2012.