



BIODIESEL THE NEW FUEL FROM BRAZIL

NATIONAL BIODIESEL
PRODUCTION & USE PROGRAM



BIODIESEL: THE NEW FUEL FROM BRAZIL

The Brazilian Government has just authorized the commercial use of a new fuel. Brazil will now begin commercial production of biodiesel, a fuel obtained from raw materials such as castorbeans, soybeans and oilpalm.

The introduction of biodiesel to the domestic market will generate significant hard-currency savings for Brazil by reducing imports of petroleum-derived diesel fuel, as well as helping to protect the environment and promoting the social inclusion of thousands of Brazilians.

This authorization is the result of joint efforts by the Government in collaboration with the automotive and fuel industries, as well as the agricultural sector and research and development, financing and regulatory bodies.

In just 12 months the Government organized the production chain, established lines of credit, structured the technological base and issued a regulatory framework for biodiesel. Brazil can now produce yet another renewable fuel on a commercial scale.

With biodiesel, Brazil embarks on a new cycle in the energy sector, reinforcing the promotion of renewable sources and of the diversification energy matrix. Renewable sources currently account for 43.8% of Brazil's total energy consumption, compared with a world average of 13.6%. In the developed countries renewable energy accounts for only 6% of the total on average.

POTENTIAL TO BE A MAJOR WORLD PRODUCER

Brazil has ideal conditions for becoming a major world producer of biodiesel. It has a vast amount of arable land, part of which is not suitable for food crops but has the right soil and climate for growing a range of oilseeds. Brazil also has the technology to implement its National Biodiesel Production & Use Program (PNPB) in a sustainable manner.



The Program was elaborated by 14 ministries under the aegis of the Interministerial Executive Committee (CEI), which is coordinated from the Office of the Presidential Chief of Staff. The Ministry of Mines and Energy is in charge of the operational management the Program.

The PNPB is essentially a non-restrictive program. Its implementation contemplates the specific characteristics of each region insofar as oilseed types are concerned and does not exclude any alternatives. In addition to the agribusiness aspects, the Program also prioritizes participation by family agriculture, encouraging the formation of cooperatives and consortia by small farmers.

Because several areas are involved and in order to provide support for technical assistance, the Government has also created the Brazilian Biodiesel Technology Network (RBTB), comprising research institutions in 23 states of the Federation.

The initial authorization is for 2% of biodiesel to be blended with regular diesel oil. The National Energy Policy Council (CNPE) will supervise a gradual increase in this percentage over the next years.

ONE MORE RENEWABLE ENERGY SOURCE

Biodiesel is a biodegradable fuel derived from renewable sources such as vegetable oils and animal fats. The oil or fat is chemically combined with alcohol or methanol in the presence of a catalyst. Brazil already produces a wide range of oilseeds that can be used as feedstocks for biodiesel, including castorbeans, African oil palm (*Elaeis guianensis*), sunflower, babassu palm, soybeans, and cotton.

This fuel can be a total or partial substitute for petroleum diesel to power diesel engines in trucks, tractors, pickups, and passenger cars, as well as motors that generate power and heat. Petrodiesel blended with 2% of biodiesel is known as B2. There are stronger blends, such as B5 and B20, all the way up to "neat" biodiesel or B100.

BRAZIL, A GLOBAL BENCHMARK

Biodiesel makes Brazil a global benchmark in the use of renewable fuels. It first won this position in the 1970s with the introduction of ethanol made from sugarcane to power automotive vehicles.

The National Alcohol Program, Proálcool, was the largest fossil fuel substitution program in the world automotive market. It is still considered a global example of excellence, and Brazil remains the largest producer and consumer of fuel alcohol in the world.


The experience Brazil has accumulated through the Proálcool serves as a strong foundation for implementing the biodiesel program and maximizing the nation's competitiveness in a relatively short period.

COMPETITIVENESS AND SOCIAL INCLUSION

Commercial use of biodiesel in Brazil is governed by a specific regulatory framework that makes biodiesel competitive with petrodiesel, taking into account the wide variety of oilseeds available, measures to guarantee supply, compliance with fuel quality standards, and the Government's social inclusion policy.

The regulatory framework is made up of laws and decrees dealing with biodiesel-diesel percentage blends, forms of use and taxation. The tax rules include differential rates depending on the oilseeds used, where they are grown, and whether they are produced by large agribusiness concerns or family farmers. Biodiesel feedstocks and the fuel itself are exempted from Industrial Products Tax (IPI). The Program has also instituted a "Social Fuel" seal.

Guidelines on production of biodiesel and percentage blends with petrodiesel were established by the CNPE and implemented via two specific resolutions issued by the National Petroleum Agency (ANP). They regulate the activities of biodiesel producers, set out specifications for



the new fuel, and establish the distribution portion of the value chain. ANP has also revised 18 resolutions on liquid fuels to adapt the rules and regulations in force to the introduction of biodiesel.

The crop area required to produce the blend of 2% of biodiesel and 98% petrodiesel will be 1.5 million hectares, equivalent to only 1% of the total acreage under crops or available for agriculture throughout Brazil (150 million hectares).

FLEXIBILITY & QUALITY ASSURANCE

The National Biodiesel Production & Use Program is not restrictive. It allows a wide range of oilseeds grown in Brazil to be used as feedstocks. The vegetable oil produced by crushing the seeds can be refined using a variety of technological routes (including thermal cracking and ethyl or methyl transesterification). This flexibility enables participation by agribusiness and family agriculture units, as well as assuring optimal use of arable land around the country.

Regardless of the oilseed used as feedstock and the technological route, biodiesel is being introduced into the national fuel market with a single set of specifications and international qualification. ANP, the National Petroleum Agency, is responsible for regulatory oversight.

CONSUMER WARRANTY

The blend of 2% of biodiesel with petrodiesel dispenses with the need to retrofit the conventional diesel engines already in use in Brazil, as is the case in countries that already use the fuel. In an official letter to the Government, the National Association of Motor Vehicle Manufacturers (Anfavea) has assured consumers that factory warranties for diesel engines will cover running on B2.

HARD CURRENCY SAVINGS FOR BRAZIL

Commercial use of biodiesel starting with the 2% blend creates a potential internal market of at least 800 million liters per year for the new fuel in the next three years. This will benefit Brazil's trade balance by saving up to US\$160 million per year thanks to the use of B2 instead of imported diesel.

Brazil currently imports 10% of the diesel it consumes. Because the many vehicles transport cargo and passengers are powered by diesel, it is used more than any other liquid fuel, accounting for 57.7% of the total at 38.2 billion liters per year.


Biodiesel can also be used to generate electricity for isolated communities that currently depend on generators fired by regular diesel oil. Local oilseeds can be used as feedstocks to produce biodiesel in these areas.

Biodiesel will also create more jobs in rural areas and in industry. Many more workers will be needed to grow oilseeds, provide technical assistance to farmers, and build and operate the industrial facilities that refine the oil and produce the fuel, as well as in the transportation and distribution.

TECHNOLOGICAL DEVELOPMENT

Brazil pioneered the development of biodiesel production technologies, granting a patent to researcher Expedito Parente in 1980. The research did not continue because at that time biodiesel was not competitive with petrodiesel.

Commercial use of biodiesel will drive further technological development, speeding up the learning curve and strengthening producers of related goods and services.



Brazil currently has the capability to produce biodiesel of world-class quality. In addition, it has the conditions to produce the world's first ethanol-based biodiesel. Other countries make biodiesel using methanol, mostly derived from petroleum.

Brazil's Ministry of Science and Technology (MCT) has been allocated a budget of US\$5.7 million to invest in research on biodiesel and industrial processes in 2004-05.

The money is being pumped into the creation of the Brazilian Biodiesel Technology Network (RBTB), comprising 23 universities across the country alongside traditional research institutions such as Petrobras's Research Center - CENPES, the National Technology Institute (INT), and the National Biofuel Complex, currently being implemented at Piracicaba in São Paulo State.

SOCIAL INCLUSION

Authorization for the use of biodiesel, the onset of widespread distribution, the differential tax regime recognizing the importance of oilseed production by family agriculture units – particularly castorbeans and oilpalms in the North, Northeast and the semi-arid regions – and the introduction of the "Social Fuel" seal are regulatory instruments designed to promote social inclusion throughout the new fuel's production and value chain.

The Social Fuel seal, awarded by the Ministry of Agrarian Development (MDA), establishes the conditions for industrial producers of biodiesel to obtain tax benefits and credit. In order to receive the seal, an industrial producer must purchase feedstock from family farmers and enter into a legally binding agreement with them to establish specific income levels and guarantee technical assistance and training.

Soybean

BRAZIL'S EXPORT POTENTIAL

With the advent of commercial production, Brazil becomes a potential exporter of biodiesel, which is already in commercial use in the United States and the European Union.

The EU aims to ensure that 2% of all the fuel consumed in the region is renewable by 2005, but it has limited acreage available for growing rapeseed, the main feedstock produced in Europe, and industrial capacity is insufficient to meet the stipulated demand. Despite these constraints, the proportion of renewable fuels is set to reach 5.75% by 2010 according to EU Directive 30, ratified by the European Parliament in May 2003.

Given the limitations for production growth in Europe, Brazilian biodiesel enjoys an unprecedented opportunity to build market share in the continent Europe.

GOOD FOR THE ENVIRONMENT

Biodiesel will help improve air quality in major cities by reducing the amount of exhaust gas emitted by vehicles when the fuel is used as a partial substitute for petrodiesel.

The use of biodiesel will also enable countries to meet their commitments under the Climate Convention and could be used to obtain carbon credits in accordance with the Clean Development Mechanism (CDM) established by the Kyoto Protocol.



Sunflower



Castorbean

For more information on the National Biodiesel Production & Use Program, or to get any other type of information, please visit the Ministry of Mines and Energy website:
www.mme.gov.br



