

## AIR-CLEANING BIOENERGY

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To revert the greenhouse effect, we need to withdraw the excess carbon from the air which is the result of 200 years using fossil fuels.

Except for the water, all plants are mainly constituted of carbon taken from the air by means of photosynthesis. Through intensive agriculture and reforestation it is possible to decrease the CO<sub>2</sub> concentration in the air. To clean the air it's enough to plant and use a lot of biomass. To withdraw the carbon from the air and cause "the fridge" effect we have to change from fossil energy standard to bioenergy.

By doing so the balance of carbon will always be negative. By using bio-fuels we always send less carbon back to the air than absorbed by photosynthesis. Always.

Rudolf Diesel's first engine was not powered by diesel oil. In 1893 he used peanut oil (i.e., vegetable oil) to demonstrate his new engine with compression ignition, stating that "the diesel engine can be powered by vegetable oils and help developing the countries using it".

Unfortunately, Petrobras has not yet given the necessary attention to the importance of a bioenergy program. As a matter of fact, few people are aware that consuming vegetable oils means cleaning the air by withdrawing carbon from the air. This theme must be better discussed and propagated.

All bio-fuels are air-cleaning. Nobody considers the complete cycle: they just analyse what comes out from the exhaust pipes. There is no analysis of what comes into, where the carbon comes from and the balance of energies. For this reason, the hypothetical hydrogen has a lot of advertising and investments!

Brazil exports cars with modern diesel engines which are prohibited here because of subsidies. While the alcohol air-cleaning car uses a Lambda probe (to measure the quantity of oxygen in the exhaust), microprocessing controller and catalizer, the diesel engine still dismiss them. This also needs to be created in research institutes, as well as developing specific engines using pure vegetable oil with even greater results. In Germany, the company ELSBETT technology has installed over 5,000 transforming kits of diesel engines to vegetable oil in the last two years in cars, trucks, ships and locomotives. This company is represented in Brazil by FENDEL tecnologia.

**Results** - by using pure vegetable oil:

- brings the possibility of total independence from petroleum-based products;
- doesn't require long-term investments, especially in equipment;

- gives immediate return of capital investments and gives incentive to seed-oil production, to agroindustry and other economical segments;
- direct effect on carbon withdrawing because in the complete cycle the absorption of carbon is bigger than in the emission;
- opposite greenhouse effect, i.e., “fridge” effect;
- more autonomy and economy; a small car is driven over 20 km using one liter of vegetable oil due to the elevated compression rate of 20:1;
- increasing of jobs and income, social inclusion and rural exodus reversion: The culture of seed-oil vegetables (soybean, dendê – African oil palm, babassu palm, castor bean...) demand a lot of labor and increase the field economy through a net of microindustries;
- more practicality and production: to make vegetable oil is simple, you just have to crush the seed-oil grains;
- international trade balance reversion: Brazil will not import fossil fuels but export air-cleaning bio-fuels. Instead of exporting low-priced soybeans, Brazil will export industrialized products: soybean bran, hamburger... with higher aggregated values;
- increase of international trade of carbon trough MDL, recommended by Kioto Protocol;
- development of agriculture, industry, research centers, trade, schools... Even the now controversial transgenic soybean can be used;

**Conclusions:**

We need to develop rules which bring incentives to the immediate economical viability of vegetable oil as a clean fuel.

And as a consequence, changes in DETRAN regulations, through environmental protection justification, so that air-cleaning cars powered by vegetable oil can circulate. We should include, in this advertising process, the participation of the car industry, car-parts industries, fuel and lubricant producers, vegetable oil industries and research institutes.

We have to be aware that the composition of a beautiful sunflower, a lettuce, a toilet paper piece or a wooden door is basically pure dehydrated carbon, and we should remember that this carbon came from the air.

**Keywords:**

Carbon capture, Negative carbon emission.

**References:**

[www.elsbett.de](http://www.elsbett.de)

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