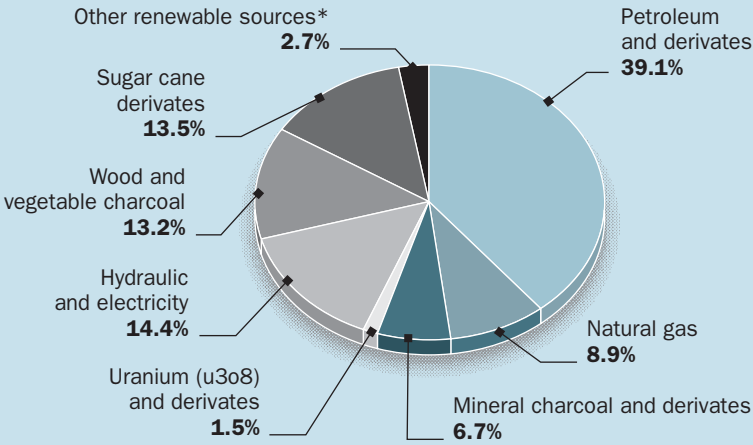


Clean energy and monoculture do not go together!

The world is entering a new era when it comes to energy sources. Substances known as biofuels are going to substitute petroleum derivates. But in order for the consumer to really have access to cleaner less pollutant energy, the production process will need to be environmentally and socially fair. After all, biofuel production starts in the rural areas, where the plants will be cultivated, in turn generating this new energy.

Brazilian energy distribution 2004



Source: National Energetic Balance 2005 (2004 data) / Ministry of Mines and Energy.
* Includes biofuels produced from residues and vegetable oils.

Biomass generates biofuel

Biomass is the generic name given to organic matter that has come from an organism – plants, animal excrements, garbage etc. – and that can generate energy. There are three ways to produce biofuels:

- **Burning** – generates steam that can move a turbine that will produce electric energy through a generator. Illegal deforestation for energetic purposes, however, has already destroyed many forests worldwide. The ideal situation would be to use residues since monoculture forests, such as eucalyptus, for example, cause many problems that will be described further on.
- **Decomposition** – generates biogas (methane gas). In rural areas, animal excrements are used, especially those from cows and pigs.
- **Extraction and transformation** – produces alcohol fuel (from sugar cane), biodiesel (from vegetal oils extracted from plants such as castor bean, palm, sunflower, jatropa, peanut and soy) and H-Bio, that is similar to biodiesel (the only difference being the means through which it is obtained).

Biodiesel – it can be pure, when produced entirely from vegetal oils, or when mixed with diesel derived from petroleum. In 2008, a diesel mixture of 2% biodiesel will be mandatory in all of Brazil. This means that the country will have to produce around 840 million liters of biodiesel per year. And from 2013 on, the mandatory mixture will go up to 5%.

Currently undergoing a process of implementation, the National Biodiesel Program intended initially on stimulating production with oils extracted from castor bean, palm and other plants cultivated by family farmers. According to this model, the project has a high potential to create jobs.

However, the entrance of soy in this context is a red alert sign: it is necessary to evaluate how to transform the country into a great producer and exporter of biofuels without making this era yet another cycle of exploration of Brazilian resources directed mainly towards the external market.

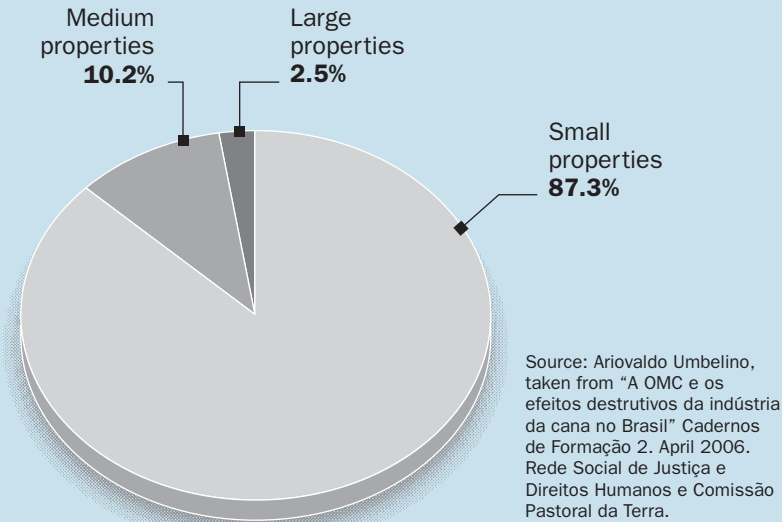
The impact of agribusiness on family agriculture

Brazil can transform itself into one of the main bioenergy suppliers in the world, but it has to find means of insertion in this market without repeating its history of social and environmental destruction.

In order to be called “clean and renewable”, this energy should not be produced through processes that involve deforestation and expulsion of family farmers from their land, in order to make place for great property monocultures.

This is precisely the problem: sugar cane, soy and eucalyptus are cultivated according to this model. That is why they require a large quantity of chemical products, that in turn contaminate rivers, subterranean waters, the soil and the air, as well as the plantation workers or those who live on lands nearby and in neighboring cities. Moreover, great properties only generate a small number of jobs.

Creating jobs in rural areas



Source: Ariovaldo Umbelino, taken from “A OMC e os efeitos destrutivos da indústria da cana no Brasil” Cadernos de Formação 2. Abril 2006. Rede Social de Justiça e Direitos Humanos e Comissão Pastoral da Terra.

Jobs in the main agribusiness activities in Brazil. Ratio of man/year, for each 100 hectares, in 2000.

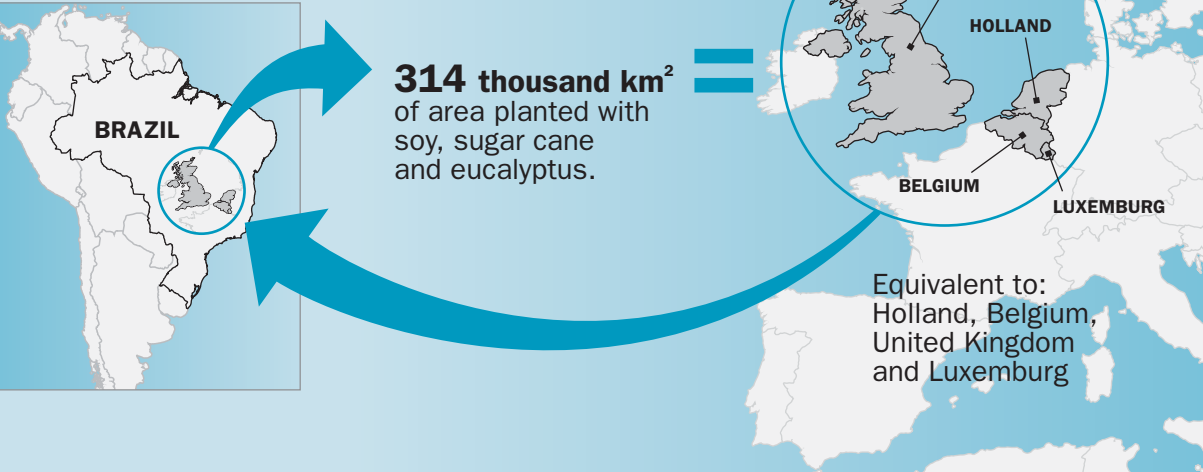
Activity	Number of jobs	Activity	Number of jobs
Cattle for meat	0.24	Orange	16
Eucalyptus*	1	Castor bean	24
Soy	2	Potato	29
Corn	8	Manioc	38
Sugar cane	10	Coffee	49
Bean	11	Onion	52
Rice	16	Tomato	245

Source: Fundação Seade/Sensor Rural, cited by Sachs (2004).
* According to Laschefski (2005), one person for each 100 to 150 hectares, forestry activities and charcoaling of wood included.

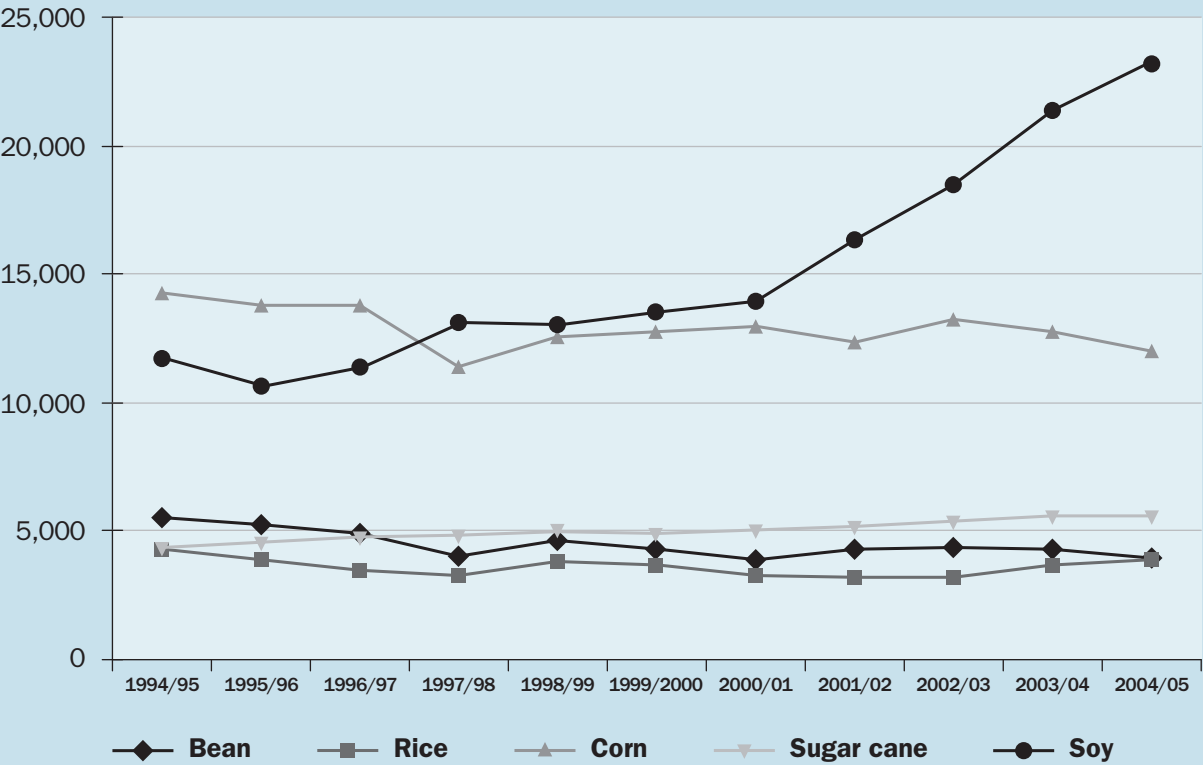
Current cultivated area (ha)

Soy	22.2 million
Sugar cane	6.2 million
Eucalyptus	3.0 million
Total	31.4 million

Source: IBGE.



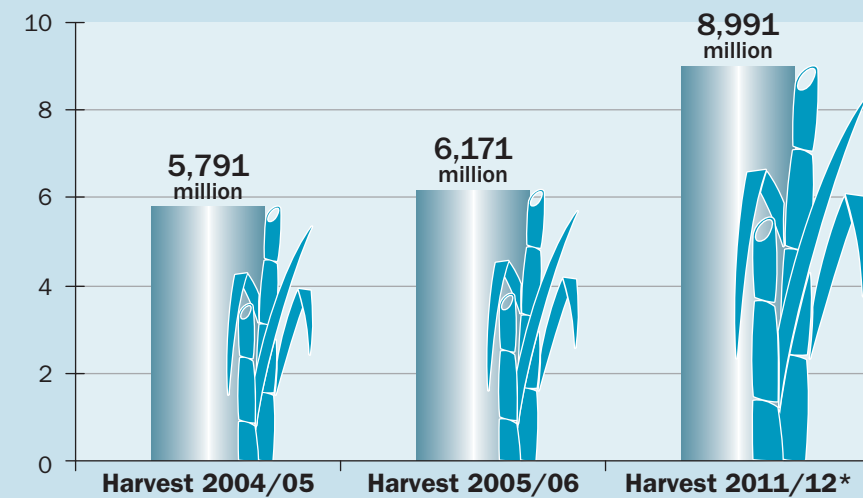
Cultivated area in Brazil between the harvests of 1994/95 and 2004/05 (in thousands of hectares)



Source: Conab.

Growth projection

Cultivated area expansion (in ha)



Source: IBGE (*Klemens Laschefski and Wendell Ficher Teixeira Assis, based on CGEE, 2005).

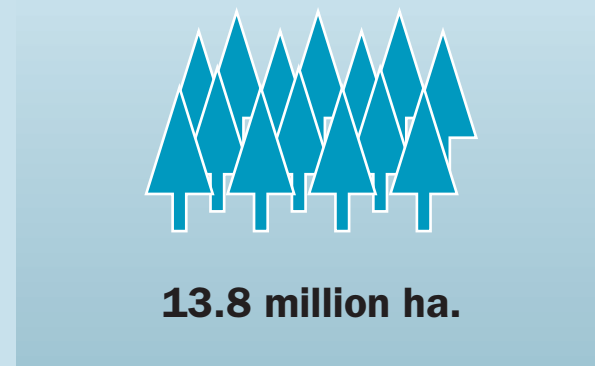
The growth might be much bigger: a second projection – based on the 2010 importation predictions of the USA, Japan and Europe – indicates the necessity of more than 3.6 million hectares of planted area to produce alcohol fuel (without taking into consideration the demand for sugar).

Projection of area cultivated with eucalyptus



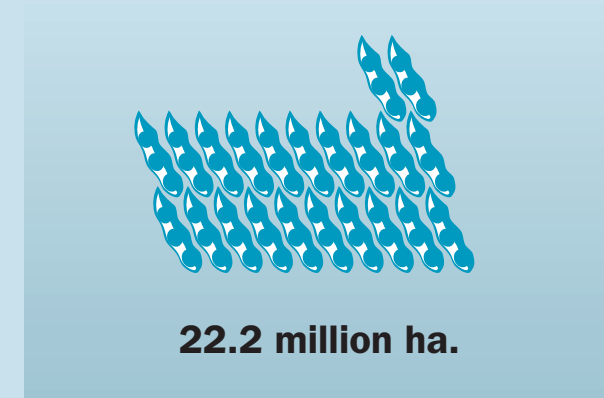
2006

Source: MAS (2005).

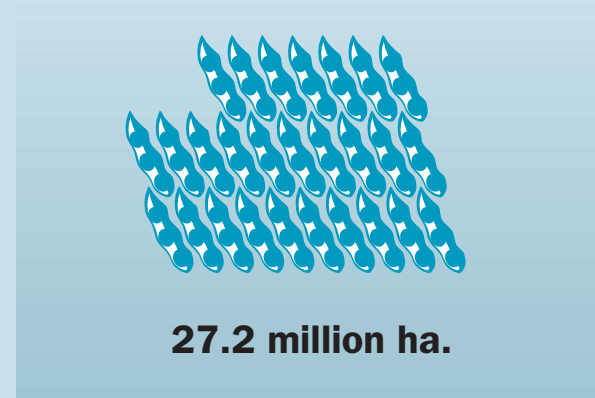


2020

Area planted with soy



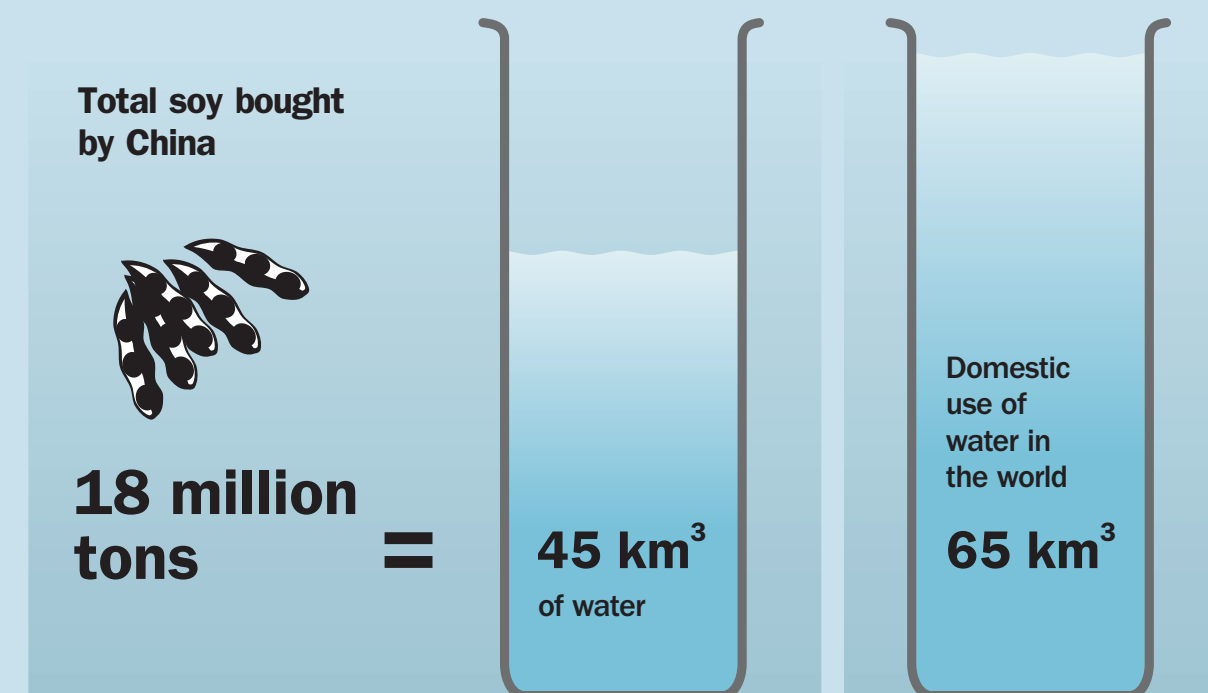
Harvests 2005/2006



Area needed*

* Above projection in order for the country to meet the demand for biofuel production between the years 2008 and 2012.

“Virtual water”: monoculture consumes the country's most valuable resource



Source: “Água virtual: a água que consumimos sem ver”. Vânia Rodrigues, www.aesabesp.com.br/artigos_agua_virtual.htm.

Among the factors that encourage agribusiness in Brazil – a sector that is now making a comeback with the finality of biodiesel production – is the “availability” of fresh water in the country. This expensive resource is almost extinct in developed nations and also in China, where rivers and subterranean waters are so contaminated that they no longer allow the growth of local agriculture.

The inappropriate use of hydro resources in soy, sugar cane and eucalyptus forests puts at risk the future supply of water in Brazil as well. The problem affects rural populations first, since 80% of them collect water directly from rivers and subterranean sources.

Some regions in the country already suffer the hazards of water contamination by chemical products used in the plantations, while others already experience the disappearance of springs. Another fact that makes the situation worse is that plantation expansion areas are concentrated in the Amazon and Cerrado, two of the planet's biomes that are richest in biodiversity.

This fascicle is a synthesis of the review **Agribusiness and biofuels: an explosive mixture – Impacts of monoculture expansion on bioenergy production in Brazil**, a publication of the Energy Working Group of the Brazilian Forum of NGOs and Social Movements for the Environment and Development (FBOMS), implemented by Núcleo Amigos da Terra/Brasil, in partnership with the Heinrich Böll Foundation.

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Agribusiness and biofuels: an explosive mixture

Impacts of monoculture expansion on bioenergy production in Brazil

