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## Agro-fuels: A turn of the screw in power concentration

With much song and dance, Agro-fuels have quickly found a place on the agendas of the governments of the North...and of the South. They promise energy independence, business, a solution to global warming, business, more foreign currency, business!!!

They also give rise to new political and regional positioning. During a controversial trip through Latin America, the United States was seeking to strengthen a partnership with Brazil regarding ethanol. Cuba has stated its rejection of agro-fuels, together with Venezuela and Bolivia. Others look, listen and remain silent...but have agro-fuels on their agendas and the enabling legal frameworks are being established.

The possibility of using rice husks, used cooking oil, grass or hay may conjure up a picture of good use and recycling of resources. However, if we apply a macro vision, agro-fuel fever comes in a very different package: intensification of industrial agriculture (together with the well-known model of monoculture crops – from food crops to trees – on a large-scale) and conversion of vast stretches of farm land into plantations for energy, no doubt in the countries of the South. Summing up, a turn of the screw by colonization. And another step forward in accumulating power.

The case of cellulosic ethanol provides an ideal scenario for this concentration of power.

Current research on obtaining ethanol from the cellulose of woody species (also known as “Treethanol”) follows two main lines of work:

- \* enzymatic hydrolysis of cellulose; and
- \* thermo-chemical cellulose conversion

The first option is still at the laboratory stage and genetic engineering work is being done to obtain, on the one hand transgenic enzymes and, on the other, trees that grow faster, producing less lignin or more easily degradable cellulose. Synthetic biology (a combination of genetic engineering and nanotechnology) is working on the creation of totally new organisms, in this case, enzymes. Genencor (US), Novozymes (Denmark), and Diversa, are working to find cheaper and more efficient enzymes. These techniques and research strengthen the monoculture model, in detriment to species diversity, considering that it would be more costly to research the multiple enzymes necessary to degrade cellulose from different species of trees.

In the attempt to lower the cost of enzymes (transgenic or synthetic ones) to obtain cellulosic ethanol, millions of dollars are at stake. Among the major investors is the US Department of Energy, which granted a four-year 385 million-dollar subsidy to six projects aimed at producing cellulosic ethanol. The US Department of Agriculture is also funding numerous projects at various universities throughout the country.

Cellulosic ethanol has become a new commodity attracting powerful groups from various sectors that are constructing an intricate labyrinth of interconnections, mergers, partnerships. Biotechnology

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companies such as Diversa Corp, Genencor (US), Novozymes Inc. (Denmark), share interests with automobile manufacturers such as Ascoma (US), or Volkswagen, and with oil companies such as Chevron and BP. In their research they are supported by research centres such as Craig Venter (US), Scion and AgResearch (New Zealand), and the Swedish SweTree Technologies. For its part, ArborGen –involving the paper companies International Paper and Mead Westvaco and the biotechnology company Genesis— is assessing the feasibility of marketing bio-fuels made from cellulose.

The other line of research to obtain cellulosic ethanol through thermo-chemical conversion carried out in bio-refineries, opens the door to another series of partnerships. The pulp and paper companies are going into partnership with chemical companies, as it would seem that it is relatively simple to convert pulp mills into thermo-chemical or integrated bio-refineries to process cellulosic ethanol. The pulp mill could gasify biomass to create synthetic gas (syngas) and then convert it into a series of fuels and chemical materials. For the pulp and paper companies this is just another opportunity for trade as it opens up another market and they could then choose the best bidder.

Thus, the biomass gasification model has created convergence of interests between the pulp and paper industry and the chemical industry. Partnerships have already been established such as that of the forestry company Weyerhaeuser with the Chevron oil company.

This is perhaps one of the most alarming aspects of agro-fuels: that of joining powerful actors from different sectors that previously had not collaborated so closely and thus enabling them to take a qualitative jump forward in the concentration of world power.

However, it also generates another process in the opposite direction. Resistance to this advance of agro-fuel, with the greater usurpation it involves, has given rise to greater synergy between social organizations and movements that previously had perhaps carried out parallel struggles. Peasant communities, with their models of bio-diverse agriculture under threat, indigenous forest communities endangered by the destruction of their habitat with the advance of energy crop plantations; those defending water and soil, alert to the expansion of an agriculture that takes away water and soil; those who struggle for human rights, because the progress of power groups is made at the expense of the peoples' rights.

All these movements are converging around resistance to this new attack and are gathering forces to denounce what it generates: an irresponsible, merciless, inhuman production, trading, and consumption model. In this process, other values, other principles, other models, another world is taking shape.

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