

BACKGROUND

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Biofuels: Myths of the Agro-fuels Transition

by Eric Holt-Giménez

Biofuels invoke an image of renewable abundance that allows industry, politicians, the World Bank, the UN, and even the Intergovernmental Panel on Climate Change to present fuel from corn, sugarcane, soy and other crops as a smooth transition from peak oil to a renewable fuel economy. Myths of abundance divert attention away from powerful economic interests that benefit from this biofuels transition, avoiding discussion of the growing price that citizens of the Global South are beginning to pay to maintain the consumptive oil-based lifestyle of the North. Biofuels mania obscures the profound consequences of the industrial transformation of our food and fuel systems—The Agro-fuels Transition.

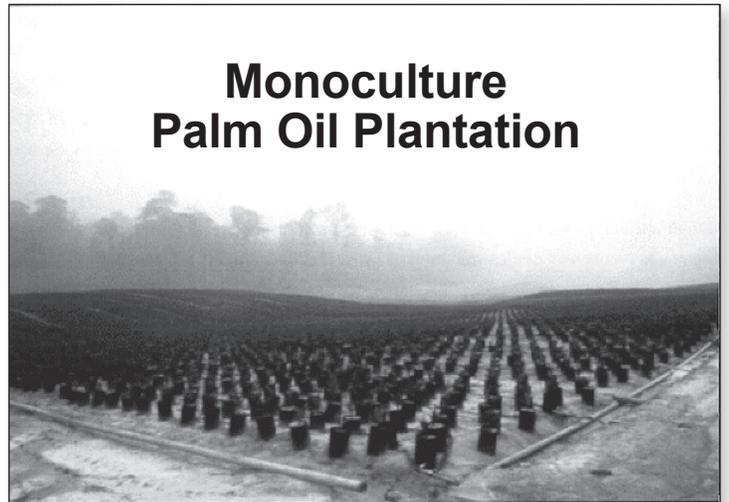
The Agro-fuels Boom

Industrialized countries have unleashed an “agro-fuels boom” by mandating ambitious renewable fuel targets. Renewable fuels are to provide 5.75% of Europe’s transport fuel by 2010, and 10% by 2020. The U.S. goal is 35 billion gallons a year. These targets far exceed the agricultural capacities of the industrial North. Europe would need to plant 70% of its farmland to fuel. The U.S.’s entire corn and soy harvest would need to be processed as ethanol and bio-diesel. Northern countries expect the Global South to meet their fuel needs, and southern governments appear eager to oblige. Indonesia and Malaysia are rapidly cutting down forests to expand oil-palm plantations targeted to supply up to 20% of the EU bio-diesel market. In Brazil—where fuel crops already occupy an area the size of Netherlands, Belgium, Luxembourg and Great Britain combined—the government is planning a five-fold increase in sugar cane acreage with a goal of replacing 10% of the world’s gasoline by 2025.

The rapid capitalization and concentration of power within the agro-fuels industry is breathtaking. From 2004 to 2007, venture capital investment in agro-fuels increased eightfold. Private investment is swamping public research institutions, as evidenced by BP’s recent award of half a billion dollars to the University of California. In open defiance of national anti-trust laws, giant oil, grain, auto and genetic engineering corporations are forming powerful partnerships: ADM with Monsanto; Chevron and Volkswagen; also BP with DuPont and Toyota. These corporations are consolidating research, production, processing, and distribution chains of our food and fuel system under one colossal, industrial roof.

Agro-fuel champions assure us that because fuel crops are renewable, they are environmentally friendly, can reduce global warming, and will foster rural development. But the tremendous market power of agro-fuel corporations, coupled with weak political will of governments to regulate their activities, is a recipe for envi-

Monoculture Palm Oil Plantation



ronmental disaster and increasing hunger in the Global South. It's time to examine the myths fueling this agro-fuel boom—before it's too late.

Myth #1: Agro-fuels are clean and green

Because photosynthesis from fuel crops removes greenhouse gases from the atmosphere and can reduce fossil fuel consumption, we are told fuel crops are green. But when the full “life cycle” of agro-fuels is considered—from land clearing to automotive consumption—the moderate emission savings are undone by far greater emissions from deforestation, burning, peat drainage, cultivation, and soil carbon losses. Every ton of palm oil produced results in 33 tons of carbon dioxide emissions—10 times more than petroleum.¹

2 Tropical forests cleared for sugarcane ethanol emit 50% more greenhouse gasses than the production and use of the same amount of gasoline.² Commenting on the global carbon balance, Doug Parr, chief UK scientist at Greenpeace states flatly, “If even five percent of biofuels are sourced from wiping out existing ancient forests, you've lost all your carbon gain.”

There are other environmental problems as well. Industrial agro-fuels require large applications of petroleum-based fertilizers, whose global use—now at 45 million tons/year—has more than doubled the biologically available nitrogen in the world, contributing heavily to the emission of nitrous oxide, a greenhouse gas 300 times more potent than CO². In the tropics—where most of the world's agro-fuels will soon be grown—chemical fertilizer has 10-100 times the impact on global warming compared to temperate soil applications.³ To

produce a liter of ethanol takes three to five liters of irrigation water and produces up to 13 liters of waste water. It takes the energy equivalent of 113 liters of natural gas to treat this waste, increasing the likelihood that it will simply be released into the environment to pollute streams, rivers and groundwater.⁴ Intensive cultivation of fuel crops also leads to high rates of erosion, particularly in soy production—from 6.5 tons/hectare in the U.S. to up to 12 tons/hectare in Brazil and Argentina.



Myth #2: Agro-fuels will not result in deforestation

Proponents of agro-fuels argue that fuel crops planted on ecologically degraded lands will improve, rather than destroy, the environment. Perhaps the government of Brazil had this in mind when it re-classified some 200 million hectares of dry tropical forests, grassland, and marshes as “degraded” and apt for cultivation.⁵ In reality, these are the biodiverse ecosystems of the Mata Atlantica, the Cerrado, and the Pantanal, occupied by indigenous people, subsistence farmers, and extensive cattle ranches. The introduction of agro-fuel plantations will simply push these communities to the “agricultural frontier” of the Amazon where deforestation will intensify. Soybeans supply 40% of Brazil's diesel fuels. NASA has positively correlated their market price with the destruction of the

Amazon rainforest—currently at nearly 325,000 hectares a year. Called “The Diesel of Deforestation,” palm oil plantations for bio-diesel are the primary cause of forest loss in Indonesia, a country with one of the highest deforestation rates in the world. By 2020, Indonesia's oil-palm plantations will triple in size to 16.5 million hectares—an area the size of England and Wales combined—resulting in a loss of 98% of forest cover.⁶ Neighboring Malaysia, the world's largest producer of palm oil, has already lost 87% of its tropical forests and continues deforesting at a rate of seven percent a year.

Myth #3; Agro-fuels will bring rural development

In the tropics, 100 hectares dedicated to family farming generates 35 jobs. Oil palm and sugarcane provide 10 jobs, eucalyptus two, and soybeans just one half-job per 100 hectares, all poorly paid. Until this boom, agro-fuels primarily supplied local markets, and even in the

U.S., most ethanol plants were small and farmer-owned. Big Oil, Big Grain, and Big Genetic engineering are rapidly consolidating control over the entire agro-fuel value chain. The market power of these corporations is staggering: Cargill and ADM control 65% of the global grain trade, Monsanto and Syngenta a quarter of the \$60 billion gene-tech industry. This market power allows these companies to extract profits from the most lucrative and low-risk segments of the value chain—selling inputs, processing and distributing. Agro-fuels growers will be increasingly dependent on this global oligopoly of companies. Farmers are not likely to receive many benefits.⁷ Smallholders will likely be forced off the land. Hundreds of thousands have already been displaced by the soybean plantations in a 50+ million hectare

area covering southern Brazil, northern Argentina, Paraguay, and eastern Bolivia.⁸

Myth #4: Agro-fuels will not cause hunger

Hunger, said Amartya Sen, results not from scarcity, but poverty. According to the FAO, there is enough food in the world to supply everyone with a daily 3,200-calorie diet of fresh fruit, nuts, vegetables, dairy and meat. Nonetheless, because they are poor, 824 million people continue to go hungry. In 1996, world leaders promised to halve the number of hungry people living in extreme poverty by 2015. Little progress has been made. The world's poorest people already spend 50-80% of their total household income on food. They suffer when high fuel prices push up food prices. Now, because food and fuel crops are competing for land and resources, high food prices may actually push up fuel prices. Both increase the price of land and water. This perverse, inflationary spiral puts food and productive resources out of reach for the poor. The International Food Policy Research Institute has estimated that the price of basic food staples will increase 20-33% by the year 2010 and 26-135% by the year 2020. Caloric consumption typically declines as price rises by a ratio of 1:2. With every one percent rise in the cost of food, 16 million people are made food insecure. If current trends continue, some 1.2 billion people could be chronically hungry by 2025—600 million more than previously predicted.⁹ World food aid will not likely come to the rescue because surpluses will go into our gas tanks. What is urgently needed is massive transfers of food-producing resources to the rural poor; not converting land to fuel production.

Myth #5: Better “second-generation” agro-fuels are just around the corner

Proponents of agro-fuels argue that present agro-fuels made from food crops will soon be replaced with environmentally-friendly crops like fast-growing trees and grasses. This myth, wryly referred to as the “bait and switchgrass” shell game, makes food-based fuels socially acceptable.

The agro-fuel transition transforms land use on a massive scale, pitting food production against fuel produc-

ing them to fully control both our fuel and food systems.

Cellulosic ethanol, a product that has yet to demonstrate any carbon savings, is unlikely to replace agro-fuel within the next five to eight years—in time to avoid the worst impacts of global warming. Major breakthroughs in plant physiology that permit the economically efficient breakdown of cellulose, hemi-cellulose, and lignin are required. Industry is either betting on miracles or counting on taxpayer bail-outs. Faith in science is not science. Selective faith in

unproven and possibly unattainable second-generation biofuel—rather than working to improve existing solar, wind, or conservation technologies—is a bias in favor of agro-fuel giants.

Agro-fuel: a new industrial revolution?

The International Energy Agency estimates that over the next 23 years, the world could produce as much as

147 million tons of agro-fuel. This will be accompanied by a lot of carbon, nitrous oxide, erosion, and over 2 billion tons of waste water. Remarkably, this fuel will barely offset the yearly increase in global oil demand, now standing at 136 million tons a year—not offsetting any of the existing demand.

The agro-fuel transition is based on a 200-year relation between agriculture and industry that began with the Industrial Revolution. The invention of the steam engine promised an end to drudgery. As governments privatized common lands, dispossessed peasants supplied cheap farm and factory labor. Cheap oil and petroleum-based fertilizers opened up agriculture itself to industrial capital. Mechanization intensified production, keeping food prices low and industry boom-

The Costs of Ethanol:

**Deforestation,
Water pollution/extraction,
Monocropping, Land degradation,
Genetic contamination,
Smallholder dispossession,
Exploited labor, Poverty,
Food Insecurity**

tion for land, water and resources. The issue of which crops are converted to fuel is irrelevant. Wild plants cultivated as fuel crops won't have a smaller “environmental footprint.” They will rapidly migrate from hedgerows and woodlots onto arable lands to be intensively cultivated like any other industrial crop, with all the associated environmental externalities.

Industry aims to genetically engineer cellulosic agro-fuel crops that break down easily to liberate sugars, especially fast-growing trees. Trees are perennial and spread pollen farther than food crops. Cellulosic candidates miscanthus, switchgrass, and canary grass, are invasive, virtually assuring massive genetic contamination. Agro-fuels will serve as the Monsanto/Syngenta genetic Trojan horse, allow-

ing. The second century saw a three-fold global shift to urban living with as many people now living in cities as in the countryside.¹⁰ The massive transfer of wealth from agriculture to industry, the industrialization of agriculture, and the rural-urban shift are all part of the “Agrarian Transition,” transforming most of the world’s fuel and food systems and establishing non-renewable petroleum as the foundation of today’s multi-trillion dollar agri-foods industry.

The pillars of this agri-foods industry are the major grain corporations, including ADM, Cargill and Bunge. They are surrounded by an equally formidable consolidation of agro-chemical, seed, and machinery companies on the one hand and food processors, distributors, and supermarket chains on the other. Together, these industries consume four of every five food dollars. However, profits have stalled for some time.

Government-subsidies and mandated targets for agro-fuels are the perfect answer to this slump in agribusiness profits, growing as oil shrinks, and concentrating market power in the hands of the most powerful players in the food and fuel industries. Like the original Agrarian Transition, the present Agro-fuels Transition will “enclose the commons” by industrializing the remaining forests and prairies of the world. It will drive the planet’s remaining smallholders, family farmers, and indigenous peoples to the cities. This government-industry collusion has the potential to funnel rural resources to urban centers in the form of fuel, concentrating industrial wealth. But it may push millions of people into pov-

erty and increase starvation-related deaths dramatically.

The agro-fuels transition suffers from a fatal flaw—there is no “new” industrial revolution. No expanding industrial sector waits to receive displaced indigenous communities, smallholders and rural workers. There are no production breakthroughs poised to flood the world with cheap food. This time, fuel will not subsidize agriculture with cheap energy. On the contrary, fuel will compete with food for land, water and resources. Agro-fuels collapse the industrial link between



80% of Brazil's CO₂ emissions come from burning forests

food and fuel. The inherent entropy of industrial agriculture was invisible as long as oil was abundant. Now, food and fuel systems must shift from a savings to a checking account. Agro-fuels lead us to overdraw. “Renewable” does not mean “limitless.” While crops can be replanted, land, water, and nutrients are limited. Pretending otherwise serves the interests of those monopolizing these resources.

Agro-fuel’s appeal lies with its potential to prolong an industrial system based on the oil economy. With an estimated one trillion barrels of oil reserves left on the planet, \$100-a-barrel of oil is not far off.¹¹ The higher the oil prices, the more ethanol costs can rise while remaining competitive. As oil becomes more expensive, first

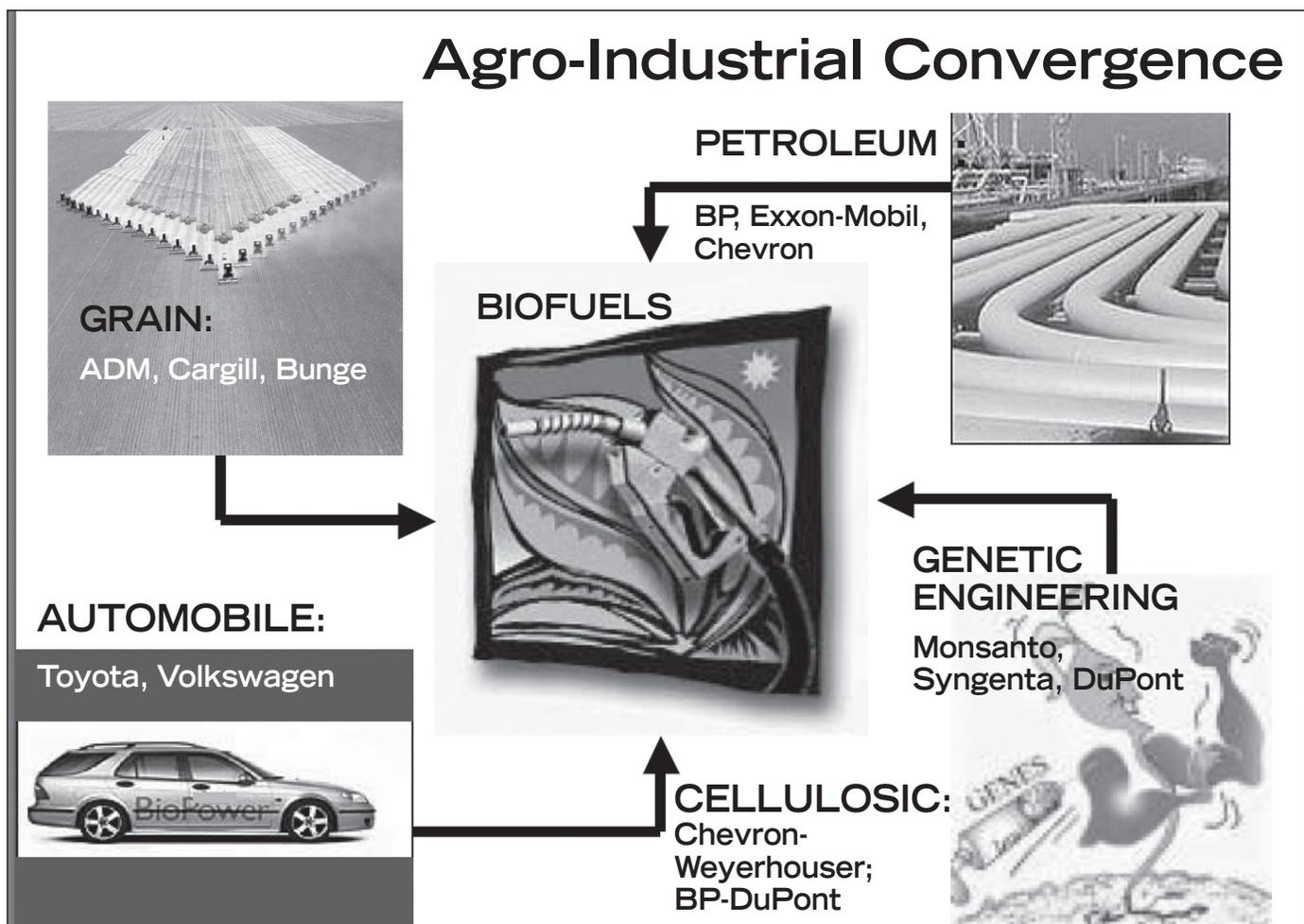
generation agro-fuels become more lucrative, discouraging the development of second-generation bio-fuels. If oil reaches \$80 per barrel, ethanol producers could afford to pay over \$5 per bushel (~127 kg.) for corn, making it competitive with sugarcane. The planet’s energy crisis is potentially an \$80—100 trillion dollar bonanza for food and fuel corporations.

Limits—not incentives—must be placed on the agro-fuels industry. If agro-fuels are to be forest and food friendly, grain, cane, and oil-palm industries require strong global management, regulation and enforcement. Strong, enforceable standards based on limiting land planted to agro-fuels are urgently needed, as are anti-trust laws powerful enough to prevent further corporate concentration. Sustainable benefits to the countryside will only accrue if agro-fuels complement local, regional and national plans for sustainable rural development.

Building Food—and Fuel—Sovereignty

The Agro-fuels Transition is not inevitable. There is no inherent reason to sacrifice sustainable, equitable food and fuel systems to industry. Many successful, locally-focused, energy-efficient and people-centered alternatives are presently producing food and fuel in ways that do not threaten food systems, the environment, or livelihoods. The question is not whether ethanol and bio-diesel have a place in our future, but whether or not we allow a handful of global corporations to impoverish the planet and the majority of its people. To avoid this trap we must promote a steady-state agrarian transition built on re-distributive land reform that re-

Agro-Industrial Convergence



populates and stabilizes the world's struggling rural communities. This includes rebuilding and strengthening our local food systems, and creating conditions for the local re-investment of rural wealth. Putting people and environment—instead of corporate mega-profits—at the center of rural development requires food sovereignty: the right of people to determine their own food systems.

In both the Industrial North and the Global South, hundreds of thousands of producers and consumers are actively organizing for their right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods. They are also re-building local food systems so that most of the wealth and benefits of these food systems accrue locally—not in the corporate coffers of the distant agri-foods giants. They are holding agri-foods corporations accountable for the exter-

nalities that their industry imposes on taxpayers in the form of hunger, environmental destruction and poor health from cheap, processed foods. Social movements for land reform, indigenous rights, farmer-to-farmer sustainable agriculture, ethical trade, farmers' markets, community-supported agriculture, inner-city gardens and neighborhood-food systems development, are a few examples of the widespread, multi-faceted efforts for food sovereignty. Organizations including Via Campesina, Brazil's landless movement (MST), the Federation of Southern Cooperatives of African-American Farmers, and the Community Food and Justice Coalition, are transforming the social will from these rural and urban movements into political will—creating the change they envision.

Food Sovereignty movements are already squaring off with the agro-fuels boom. When U.S. president

George Bush arrived in Brazil to establish an ethanol partnership with President Lula, 700 women from Via Campesina protested by occupying Cargill's sugar mill in Sao Paulo. But derailing the agro-fuels juggernaut entails changing the Agro-fuels Transition from an agrarian transition that favors industry to one that favors rural communities—a transition that does not drain wealth from the countryside, but that puts resources in the hands of rural peoples. This is a far-reaching project. A good next step would be a global moratorium on the expansion of agro-fuels. Time and public debate is needed to assess the potential impacts of agro-fuels, and to develop the regulatory structures, programs, and incentives for conservation and food and fuel development alternatives. We need the time to forge a better transition—an agrarian transition for both food and fuel sovereignty.

Agro-industry's legacy in Brazil

- Illegal deforestation for new sugar cane, soy or eucalyptus plantations;
- Expulsion of small farmers and land concentration
- Pollution of soil, rivers, and subterranean waters from deforestation and chemicals used in monocultures;
- "Green Deserts" of poverty: for each 100 hectares of plantation there are 2 poorly-paid jobs in eucalyptus;
- 1/2 for soy, and 10 for sugar cane



—The Brazilian Forum of NGOs and Social Movements for the Environment and Development

Endnotes

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