



Bringing Agriculture and Energy Together: Biofuels from Sun, Land, and Labor in Africa to Enhance Development Goals

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Background

It seems, sometimes, that the topic of biofuels is a near-constant barrage. Environmentalists as well as politicians, including those seeking election by touting a strong “green” energy platform, are jumping on the bandwagon to be seen as doing their part to achieve energy independence. In the industrial world, however, a total switch from fossil diesel to biodiesel may not be realistic to achieve in view of current industrial strongholds and special interest groups. More realistic, however, may be a partial replacement of fossil diesel with biodiesel fuel. These two forms of diesel fuel, fortuitously, can be blended without any difficulty and indeed can result in significant corollary emissions reductions.

Consider the following data, and the fact that the precursor of industrially produced biodiesel is always a vegetable oil.

Global Production of Vegetable Oils, 2002/03 (million metric tons)

Soybeans	29.85
Palm	25.37
Sunflower	8.32
Rapeseed	11.41
Cottonseed	3.56
Peanut	4.51
Coconut	3.23
Olive	2.35
Palm Kernel	3.17
Total	91.77

Replacing the United States’ on-road fossil diesel usage would require the world’s entire production of vegetable oils to be converted to biodiesel fuel. Likewise, replacing fossil diesel for on-farm use in the U.S. with a source of biodiesel (3.1 billion gallons/year) would require the conversion of all the vegetable oil currently grown in the country, on approximately 15% of the total productive land area. Gasoline, a fossil fuel which could be replaced, partially, by a biofuel, ethanol, has a consumption 2.2 times greater than total diesel usage.

Thus, growing feedstock for biodiesel is one of the few agricultural commodities that would be impossible to over-produce.

Achieving comparative advantage in the developing world is a much more feasible proposition, however. The *entire continent of Africa* uses 1/5th of the fossil diesel of the United States. On a country-by-country basis, it will often be the case that sufficient land is available to grow a biofuel feedstock, which if done “right,” can be an enterprise enjoying a **triple-bottom-line** – bringing **environmental** and **social benefits** to the host communities as well as **profit** to the operating company and its shareholders. Import substitution and a recognized, new tax base contribute to foreign exchange and local earnings for national treasuries. These new dollars can be used by governments to retire debt, to build necessary infrastructure and civic systems, and to enhance civil service wages; and in theory contributing to reduced absenteeism and corruption. At both a local (i.e., project) area and at the national level, Biofuel projects have the prospect of enhancing the ability of nations to meet their Millenium Development Goals (MDGs).



How Can a Biofuel Project Be Done “Right”?

Various European Union (EU) nations have belatedly awoken to the fact that at their worst, biofuel projects can do more harm than good. This is particularly true for biodiesel derived from palm oil because of the likelihood of concomitant destruction of tropical rainforests. There are other examples where productive, arable lands have been taken over by biofuel feed stocks, to the detriment of national-level food balances and, possibly, household-level food security.

Led by the EU, a variety of “gold standards” are being proposed to assure the “rightness” of biofuel projects. But the principles are in any case self-evident and transparent, and have been closely adhered to by the Company since its formative inception. These principles include:

- (1) The enterprise must be at minimum environmentally and ecologically benign, and preferably one that enhances these key areas;¹
- (2) The enterprise must enhance household food security, and reduce poverty, through long-term infusions of cash to the involved communities (in development parlance, this is known as sustained livelihood streams);
- (3) The enterprise cannot undermine productive arable land, nor can it abstract water for irrigation in competition with food production or in an otherwise damaging manner; and as a real commitment to corporate social responsibility,
- (4) The enterprise must return a minor percentage of its gross profits to the community to be used to support and promote various community development initiatives.

Sun and Land: Africa’s Cornucopia

If there is one commodity that Africa is not generally short of, it is sunshine. Sunshine in combination with a substantial endowment of both unutilized and under-utilized land and adequate rainfall for the feedstock to be grown under rain fed conditions, there is a strong possibility for the Biofuel industry to make a real contribution to poverty reduction and partial energy independence. A secondary benefit is the use of Biofuel will enhance the global commons by stemming the rate of increase in atmospheric carbon dioxide.

For example, our Company plans to use 60,000 ha in northwest Tanzania for cultivating an indigenous oil-bearing tree, grown entirely under rain fed conditions. Local out-growers will manage two-thirds of this area. We expect to infuse nearly US \$7 million into the local economy every year for approximately 50 years. Inflation adjusted; in wages or wage-equivalents this is a considerable cash infusion into an economically depressed area. Spin-off industries such as bee keeping, biogas production, and organic fertilizers will further boost the local economy. At maturity, a decade hence, we expect the enterprise to replace roughly 10% of Tanzania’s current fossil diesel consumption, to be used in producing electrical or motive power, or both. At a fuel price of just US \$60/barrel, the Government will conserve approximately US \$40 million in foreign exchange earnings each year.

Imagine these dollars allocated to education... Biofuel production in East Africa will have tremendous positive impact; Our Company is developing a scalable model to make it so.

¹ Environmentally benign means, for example, that there’s no depletion of soil nutrients, no use of pesticides/ herbicides that pollute drinking or bathing waters, etc. Ecologically benign incorporates wildlife habitat and biodiversity needs; for example, gazetted protected areas cannot be decreed to be available for biofuel feedstock production, nor can a project otherwise in part, or in combination with others, have a detrimental effect on biodiversity. Furthermore, the feedstock should be guaranteed through appropriate research to not have the ability or propensity to “run wild.”