



Submission on the Draft Biofuels Industrial Strategy

By:

**Earthlife Africa eThekweni Branch
African Centre for Biosafety
GRAIN
SAFeAGE
Ekogaia
The Third World Investment Gateway Trust**

To:

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1. INTRODUCTION

This submission is made jointly by a number of non-profit organisations that are active in South Africa, and elsewhere in Africa, working on a range of environmental and agriculture issues pertaining to food and seed security, genetically modified organisms, zero waste farming and consumer rights. We support the submissions made by our coalition partners, Biowatch South Africa and Farmers Legal Action Group as well as the comprehensive critique made by African Sustainable Fuels Centre on the Feasibility Report, and the 'CURES Declaration on Bioenergy'.

Whilst we welcome the opportunity to submit our comments on the draft Industrial Biofuels Strategy ("Biofuels Strategy"), we reserve our rights to publicly express our extreme disquiet at the lack of full and proper public consultation with rural communities that are likely to be impacted by the Biofuels Strategy.¹

Furthermore, we are outraged at the backroom deals being struck to roll out large scale plantations of Soya, maize and canola on municipal commonages and traditional communal/tribal land in the former homelands,² in anticipation of a cabinet mandated biofuels strategy.³

We question the sincerity of government to conduct a meaningful consultation process whereby the views of civil society are factored into the development of a final Biofuels Strategy. We point to the recent announcement by the Industrial Development Corporation (IDC), to invest R3.2 billion in biofuels projects in Cradock, Hoedspruit, Pondoland, Ogies and Makhathini⁴-all based on food crops, for which 100% fuel tax rebate is demanded in addition to the price of oil (below \$50/bbl). According to the IDC, biofuels projects involving sugarbeet in

Cradock and sugarcane in Hoedspruit are at “a detailed engineering study level”.

It appears thus that it is *fait a compli*; a biofuels industry will be established to meet mandatory blend targets (E8 and B2) based on the production of large-scale liquid biofuels and the necessary legal framework (mandatory targets) and financial incentives (subsidies, and fuel tax rebate linked to the oil price) will be devised to bring this to fruition.

Nevertheless, we submit these comments in good faith.

2. KEY CONCERNS

The Biofuels Strategy is mainly focused on establishing a biofuels industry in South Africa, with the single-minded imperative: to justify the provision of a package of financial incentives for large-scale commercial agriculture.

The Biofuels Strategy will have far-reaching impacts on many aspects of South Africa's socio-economic life, in particular on agriculture, land use, food security and the environment. Biofuels is seen by the business sector as a huge financial opportunity and for this reason vast amounts of venture capital is being pumped into the sector.

The current worldwide scramble for biofuels is creating an economic bubble with large investments and the provision of subsidies and incentives. Predictably, this bubble will eventually burst and countries that can afford to subsidise their farmers will control the industry and markets (as is the case with large commodities) and a few global companies will inherit a monopoly. In the rush to join this fruitless race,

South Africa will have wasted billions of public funds on subsidising industry, created a land and water crisis, as well as a humanitarian crisis in the region because of high grain and food prices and exacerbated the impacts of climate change.

1. We are vehemently opposed to the establishment of a biofuels industry with E8 and B2 blend targets based on bioethanol from maize and sugarcane, and biodiesel from Soya and sunflower seeds respectively or on any other food crops for that matter (sweet sorghum and cassava);
2. We object to the inclusion of large- scale liquid biofuels as part of the renewable energy package of solutions for South Africa;
3. There is no evidence of tangible and realisable benefits that will accrue to rural communities to justify the expenditure of large amounts of public funds to subsidise a biofuels industry;
4. The Biofuels Strategy is a stand alone 'quick-fix' measure pandering to the petroleum and motor vehicle industries rather than one that is situated within holistic approach to climate mitigation, sustainable development and poverty alleviation;
5. We are taken about by the failure of the Strategy to deal with the use of genetically modified crop plants and trees, and "second generation" biofuel plants and trees based on transgenic technologies, in the production of biofuels and the concomitant biosafety consequences; and
6. We strongly oppose any biofuels strategy that does not include sustainably technologies such as algae and biogas. Anaerobic biogas digesters are a 3000 year- old technology with over 15 million working units worldwide⁵!

3. SPECIFIC COMMENTS

3.1 The Biofuels Strategy is outdated

The Biofuels Strategy is already outdated as new and compelling evidence is emerging in two significant respects: Current evidence from reputable academic institutions shows that biofuels uses more energy to produce than it saves. Biofuels is in fact worse for the planet than petroleum. Second, emerging evidence points to the devastating impact of biofuels expansion on land use and consequently biodiversity, food security, and food markets. It is clear from this evidence that by going the biofuels route as articulated by the Biofuels Strategy, we are most certainly steering the planet and our country on the road to devastation, rather than saving it.

3.2 Negative impacts on national and regional food security

Big business and industry, especially the large- scale commercial farming sector are all strongly lobbying in favour of the production of biofuels for industrial uses as they see markets and profits, and most significantly, export markets. South African agriculture is facing a water crisis, we are struggling with poor soils, we have frequent droughts and much of our population cannot afford to buy food as a result of already high food prices. In a competition between growing crops for fuel or for food in the context of these limited resources, fuel will win because the rich can pay the price and the poor will suffer. This will create a humanitarian disaster in South Africa but also in the region.

3.2 Negative impacts on the environment and biodiversity.

Further clearing of forests and using communal lands to grow crops for biofuels which the poor most likely cannot afford is not a solution but worsening the problem, albeit providing the means for the wealthy to get around in their cars. Even small -scale solutions, such as using crop waste to fuel farms have disadvantages and this must be carefully considered. In Africa where the soil is often poor and there is already a problem with biomass that should regenerate soil, it is not a good idea to burn more biomass. The search for energy in rural areas has a huge impact on biodiversity already as forests are being chopped down for firewood and charcoal.

3.4 Full Cost Accounting

The 2003 White Paper for Renewable Energy calls for the full cost accounting as a 'key policy principle' of renewable energy policy 'and the fundamental premises that Government will use to apply, develop and test policy and subsequent actions, including decision-making, legislation, regulation and enforcement'.

The White Paper specifies the full cost accounting will be 'based on an assessment of the full economic, social and environmental costs and benefits of policies, plans, programmes, projects and activities of energy production and utilisation'.

The biofuels strategy does not attempt to perform any full cost assessment and makes no mention of the following costs associated with large- scale monocropping in rural communities:

- The environmental cost of pesticide herbicide and synthetic fertilizer pollution to wildlife

- The environmental and economic cost of pesticide, herbicide and synthetic fertilizer cost to soil life
- The cost to human health of farm workers exposed to toxic pesticides and fertilizers required for monocropping for both acute and chronic poisoning.
- The cost to human health and particularly children and pregnant woman in households exposed to pesticide and herbicide spraying.
- The social and cultural cost associated with the loss of traditional farming practices from the loss of grazing to biofuels production.
- The environmental cost of soil erosion resulting from overgrazing and soil where householders refuse to let go of their cattle.
- The cost of loss of heritage maize seed contaminated with hybrid patented GM varieties

It is imperative that the biofuels strategy is revised to comply with the White Paper for Renewable Energy to include full cost accounting that clearly defines the full impacts of the proposed biofuel intervention to the health cultural and social fabric the of the rural communities as well the biodiversity and these rural environments. Without this information, it is not possible for the potentially affected rural communities and farming to make informed choice in the assessment and adoption of the strategy.

3.5 Biofuels: Asking the right questions

In order to continue down the road of large scale Biofuels: the following questions must be answered honestly and with integrity.

1. **Why Biofuels?** Are there other ways to reduce energy use, should we not change consumption patterns, land use, city planning. Alter the way we use energy as a first step?

2. **What is the real impact on Climate Change?** It is now scientifically proven that so far the biofuels industry is having a significant negative impact on Climate Change. Biofuels production is a high cost investment particularly if it converts current traditional and multi-crop farming areas and wild land to mono-crop and chemical agriculture - for short-term gains. Several crops proposed in the Biofuels Strategy (for example maize) have a marginal positive energy balance when looking at the total energy balance. The Biofuels Strategy will simply perpetuate current unsustainable practices that reinforce current unsustainable lifestyles of the wealthy being subsidised by the poor. Government policy and investment must first address public transport systems, vehicle efficiency standards in manufacturing, tax reforms to encourage consumers to purchase more efficient vehicles and encourage the use of non-motorised transport.

What is the impact on landuse and biodiversity? We are concerned by the way in which the term 'under-utilised land' (p.10) is used-based as it is on western, agri-business worldview. While this land may indeed include areas of high agricultural potential it currently performs many functions including providing diverse agricultural, cultural, medicinal and housing related products to rural communities as well as providing 'environmental services' (such as water catchments, water cleansing, flood attenuation) and providing habitats for multiple species. The Biofuels Strategy and current planned investments in former homeland areas will have devastating consequences through the imposition of large-scale, mono-crop agriculture in these areas.

According to SANBI expansion of croplands (especially under current agri-business models of production) is the primary cause of biodiversity

loss in South Africa, as well as impacting critically on the quality and availability of water in our fresh water eco-systems.

What is the social impact, including livelihoods and food security?

Growing crops for fuel will only exacerbate the pressure on land, on soil and on water. In addition it will distort markets, which will add to the crisis in food security and the poor will lose out. And this situation will politically, morally and socially not be sustainable. Sugarcane for instance, is not sustainable due to their water consumption and high chemical use and concomitant environmental negative impacts.

There is growing evidence internationally that food prices are increasing where there is high demand for biofuels. Recent riots in Mexico over the increasing price of maize resulting from the USA maize for ethanol craze bear testimony to this fact. The analysis of the potential impact on food prices in the strategy is not adequate. **We recommend that government legislate against the use of food crops for biofuel production.** South Africa's role in using our own agricultural surplus to supply food in the southern African region cannot be overlooked.

Even where non-food crops are used for biofuels, if the demand for fuel drives up the price of biofuels farmers will convert more land to biofuels production. Competition for agricultural land will inevitably reduce the amount of food or animal feed crops grown and this scarcity will increase food prices.

Given international trends such as peak oil and climate change our overall development path should ensure that South Africa develops the skills to produce food and other resources at as local a level possible for local consumption. Any strategies, which divert

communities from food production to cash cropping where access to food then becomes dependent on having money, should be avoided. Any failure in the crop due to climate instability, volatile markets, or increases in input costs make communities extremely vulnerable and can lead to hunger epidemics. Again the overall impacts must be assessed and food security and long-term sovereignty prioritised.

What is the impact on fuel use? At the current rate of urbanisation and industrialisation, fuel use is exponentially growing because lifestyle changes, and land use changes, better public transport systems, etc. are not seen as part of the solution. 75% of all energy is being used by cities but little is done to bring this consumption rate down.

Also of concern is the implication that biofuels will 'take care' of a major portion of our renewable energy target when in fact the biofuels industry will not contribute to renewable energy provision and may actually direct funding away from investment in true renewable energies. A full cost-benefit analysis comparing investment in a range of renewable energy options as part of an integrated energy plan is essential before committing public funding to the development of a biofuels industry.

What are the likely impacts of the over-capitalisation in biofuel processing?

We note that there is already substantial investment by the private sector in biofuels processing plants, and that the strategy further recommends, "government facilitate an environment conducive to investments". We are concerned that the overall capacities of larger-scale biofuel plants need to be assessed and monitored to ensure that there is not an excessive demand for biofuel feedstock created in the country due to over-investment in processing facilities. This will inevitably put pressure on scarce land resources, create competition

for grains thereby driving up prices with negative impacts on the price of food, as well as creating a market for imported oils.

What are the implications of importing feedstock for biofuels plants?

In addition to excessive processing capacity there will also inevitably be a shortfall in feedstock as the industry and farmers gear up to meet the mandatory targets that the strategy is proposing. We are extremely concerned about the impacts of the trade in oils and grains for biofuels production as this defeats the purpose of local job creation and the added transport consequences negates any positive environmental benefit. Furthermore biofuels are rapidly becoming the greatest cause of deforestation with consequent loss of biodiversity and the destruction of local cultures in countries like Indonesia, Malaysia, Thailand and Brazil.

4. GMOS, Biofuels and Biosafety

The Biofuels Strategy has a direct bearing on the bitterly contested terrain of genetically modified crops, yet it has simply chosen to ignore this Pandora's box. What makes this particularly unforgivable is its failure to account for the environmental and socio-economic consequences of the expansion of South Africa's GM acreage of maize and soyabeans.

SA's acreage of GM crops is reported to have grown to approximately 29% of maize and 59% of Soyabeans.⁶ Indeed, according to the International Service for the Acquisition of Agri-Biotech Application (ISAAA), South Africa's GM plantings for the 2006/7 period is estimated to have increased by 180%-from around 500 000 ha to 1.4 million ha.⁷

BIOSAFETY CONCERNS Current scientific knowledge and understanding of the ecological impacts of GM crops is inadequate. More

scientifically rigorous ecological research on their environmental risks is critical, a process that has yet to get underway in South Africa, reasons enough to justify a moratorium on all environmental releases. GM crops have shown to easily contaminate local varieties in the hands of local farmers. The use of herbicides such as glyphosate in conjunction with GM maize is acutely toxic to humans and animals.

The health risks posed by GMOs need further research. SA has approved GMOs that use old technologies with antibiotic resistant gene markers. These have been banned in many countries in the world. Scientists have warned that the continued use of viral promoters pose unacceptable health and environmental risks. A new independent study by French scientists has confirmed that the data submitted in support of market approval for GM maize MON 863 produced by Monsanto gives rise to serious concerns regarding its food safety. The study by CRIIGEN (Committee for Independent Research and Genetic Engineering, based at the University of Caen, France) is said to be the first independent evaluation of data submitted by a biotech company for regulatory approval of a GMO for food/feed, which is published in a peer-reviewed scientific journal.

SOCIO-ECONOMIC CONCERNS There are very few studies that comprehensively investigate medium to long-term socio-economic impacts, particularly concerning resource-poor farmers who sign licensing agreements for the use of patented GM crops, making it illegal to save and exchange the seeds. Already Monsanto Corporation, which owns 95% of the global GM crop market, has successfully sued farmers for patent infringement.

Monsanto has conceived of an ingenious smallholders' programme known as the 'Seeds of Hope Campaign', which targets the 'bottom of

the pyramid'-very low-income consumers who have substantial purchasing power as a group.⁸

During the 1990s, Monsanto South Africa introduced 'Combi-Packs'-boxes of materials designed specifically for smallholder farmers, having access to anything from ¼-5 hectares of land in the Eastern Cape. The boxes contain a package of hybrid maize seed, some fertilizer, some herbicide, and pictogram instructions for illiterate users.⁹ Through the Seed of Hope Campaign in the Eastern Cape- Monsanto's project was subsidised with huge chunks of public funds, which enabled it to penetrate extremely impoverished communities- first by introducing a Green Revolution type package as an important precursor to the introduction of its GM maize seeds, ably assisted by Bayer Cropscience, amongst other players.

5. ALTERNATIVES

5. 1 Biofuels from Algae

Algae as biofuels feedstock provides a much more realistic option to supply a much higher proportion of our energy demand - at far lower cost - while not competing with expensive and sometimes scarce (as now in times of drought) food crops.

According to the US Department of Energy, algae is capable of producing between 50, 000 to 200, 000 litres/ha.

Bioalgae based biofuels can reduce greenhouse gas emissions by between 30% and 45% and by up to 85%, far higher levels than achieved by crop based biofuels. This is because bio-algae fuel production can be linked not only to sewage and contaminated water

sources but also can be used to scrub power plant emissions, something that is ideally suited to the South African situation. Power stations have both sufficient water, maintained at ideal temperature levels, combined with flue gasses that can enhance the production of significant amounts of algae. CO₂ is the ideal feedstock for algae, thereby reducing greenhouse gas (GHG) emissions.

To get an idea of the volumes possible, one of the developers of this technology, Dr Isak Berzin of Massachusetts Institute of Technology, calculates that just one 1,000 megawatt power plant using this system could produce more than 40 million gallons (approx 160 million litres) of biodiesel and 50 (approx. 200 million litres) million gallons of ethanol per annum.¹⁰ This would require a 2,000-acre "farm" of algae-filled tubes near the power plant, so sufficient land in close proximity is an important consideration.

Following these extrapolations, South Africa is capable of producing over 70% of our 2015 liquid fuel needs using this technology alone¹¹. This can be supplemented by using production of algae based biofuels in pond and other open loop systems.

Several varieties of algae have oil contents of over 50% and in this regard, there are several technologies under development able to convert the cellulosic remnant of the algae into ethanol that is far superior to cellulosic conversion of other plant crops to ethanol, due to cell size. Biofuels Strategy has failed to include this important technology as an option for South Africa to explore and consider adopting. Many of these possibilities are at advanced states of research elsewhere in the world.

It is imperative that sufficient research is directed towards the production of algae based biofuels that can reduce pollution and

simultaneously, our GHG emissions, in order to achieve meaningfully sustainable energy production goals.

5.2 BIOGAS

Biogas can be produced with the existing kraaled animal manure using cheap polyethylene tube digesters. Furthermore the use of biogas as a vehicle fuel is a mature technology and there are over five million flexi fuel cars that can be powered by biogas on the planet. The Department of Science and Technology prefeasibility study report entitled '*Preparatory Framework for a National Biogas Programme*'¹² clearly indicates the feasibility of rolling out biogas systems in the rural communities to provide access to clean, safe energy & appropriate sanitation.

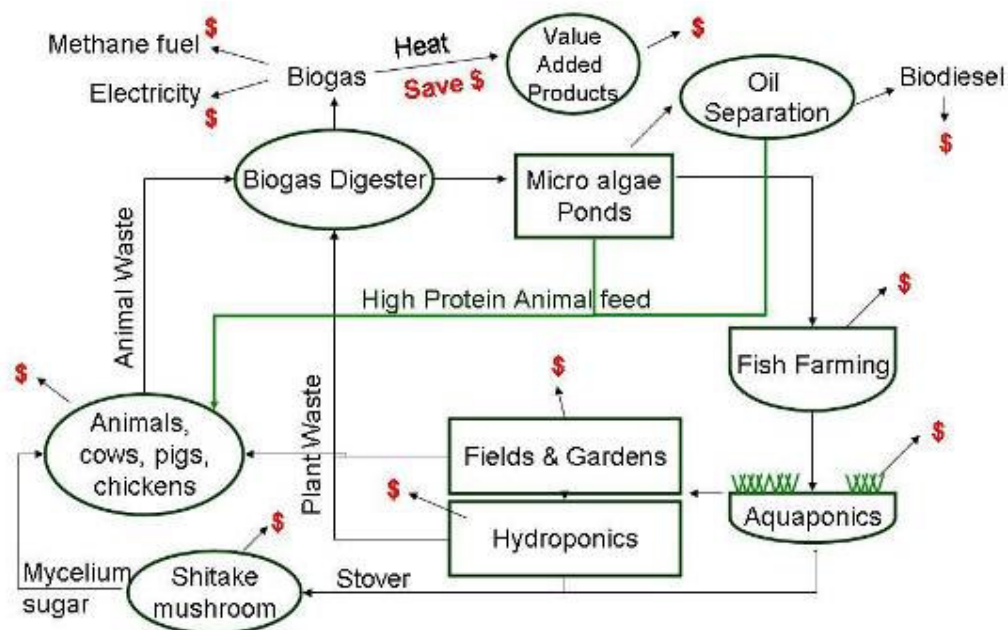


Figure 2: Various Biogas Powered Vehicles

5.3 Zero Waste Agriculture for Food and Fuel Production

Zero waste agriculture is the synergistic use of the full natural kingdom of plants, animals, bacteria, algae and fungi to produce food, energy fertilizer and feed. The methane rich biogas forms only 20% of the

economic value¹³ of the biogas digester, as the nutrient & CO₂ enriched effluent from the digester can be used to grow chlorella algae which has a high oil content for biodiesel production and a high protein content suitable for an animal feed. The nutrient rich oxygenated effluent from the digester can be used to grow plankton for aquaculture or simply just as organic fertilizer for crop production. An integrated biogas / algae system on a 1 ha intensive zero waste farm can produce over 1000 litres of biodiesel on a 500m³ algae pond¹⁴ in one year.



Simple Zero-Waste Agriculture System

Integrated zero waste & traditional farming practices

Kraal waste from a typical rural household in Tsomo with 5ha land and 5 cattle, 6 sheep, 7 goats and 2 pigs can produce the following products each year:

ALL of its people and future generations, as has been fully canvassed in this submission. Then we can talk of a country with a vision, not this blind following of global consumerist trends. There is no doubt that we will have to put in place a different economic and social system to survive and the sooner we do it the better off we will be.

We reiterate the call by various organisations that government halt the current process and place an immediate moratorium on large-scale bio fuels projects and to stop the “land grabs” and embark on a proper public consultation with all stakeholders so that we might all have a say in our future and the future of our children and the survival of the planet!

¹ *Rural Communities express dismay: “land grabs” fuelled by Biofuels Strategy* March 2007 Statement signed by 29 South African groups and others.

² For instance in the Eastern Cape, the Provincial Biofuels Task Team and Eastern Cape Development Corporation, revealed plans to plant canola on 500,000ha of the most arable non-irrigated commonage and communal land in the former Transfer and then process it into bio-fuel at a plant in the East London industrial development zone. R1.5 billion will be spent on fencing and liming this land to prepare it for monoculture. Furthermore, while local communities forego their existing diverse food gardens and communal grazing lands, multinational companies like Monsanto will collect on government agricultural subsidies through the Massive Food Production Programme by providing seed, chemical inputs and even mechanisation on the farmer’s behalf. The EC Premier’s State of the Province Address for 2007 confirms that an initial 70,000 ha of irrigated land in the Umzimvubu valley is to be placed under canola monoculture in the next season.

³ *Rural Communities express dismay: “land grabs” fuelled by Biofuels Strategy* March 2007 Statement signed by 29 South African groups and others.

⁴ IDC to pour R3.2bn into new biofuels projects Business Report, Independent Newspapers, South Africa March 28, 2007

<http://www.busrep.co.za/index.php?fSectionId=566&fArticleId=3752734>

⁵ World Watch Institute, 2005

⁶ USDA Foreign Agricultural Service GAIN Report, South Africa, Republic of Biotechnology Pretoria’s Biotechnology annual with minor corrections, 2006

⁷ Clive James, 2006, ISAAA, www.isaaa.org

⁸ Enterprise Africa, ‘Policy comment no. 6: Seeds of Hope: Agricultural Technologies and Poverty Alleviation in Rural South Africa,’ http://www.enterprise-africa.org/Publications/pubID.2774/pub_detail.asp (8 September 2006).

⁹ Karol Boudreaux, *Seeds of Hope: agricultural technologies and poverty alleviation in rural South Africa. Mercatus policy series. Policy comment no.6.* (August 2006) 1.

¹⁰ Algae - like a breath mint for smokestacks.

<http://www.csmonitor.com/2006/0111/p01s03-sten.html>

Turning Emissions Into Fuel With Algae.

<http://www.worldchanging.com/archives/003999.html>

¹¹ Using our production of nearly 40, 000 MW of fossil fuel derived electricity generation and using the numbers provided by Berzin, 70% is easily achievable.

¹² Report available from Ms Pinda Sitetyana, Department of Science and Technology, +27 21 4874603

¹³ Integrated Farming Presentation to Elsenburg Agriculture College, Stellenbosch, April 2005, Professor George Chan, Zero Emission Research Initiatives (ZERI) international

¹⁴ Based on an algal production from the 1 ha UNESCO Montefort Boys Town integrated farming project, <http://www.ias.unu.edu/proceedings/icibs/ibs/info/fiji/asifo/montfort-asifo.htm>

¹⁵ Source: <http://www.indsp.org/pdf/DreamFarmHowtoBeatClimateChange.pdf>