

Title: Biofuel Policies in South Africa: A critical analysis

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Abstract

In 2007 the South African government released the country's National Biofuels Industrial Strategy targeting a biofuels market penetration of 2% of liquid road transport fuels by 2013. Contrary to the international situation, the main driver for the development of a biofuels industry in South Africa is neither the economic threat of increasing oil prices nor mitigation of greenhouse gas emissions, but the need to create a link between the country's first and second economies. Specifically, the government hopes to stimulate economic development and to alleviate poverty through the promotion of farming in areas previously neglected by the apartheid system. Before the release of this strategy, commercial sugar producers and maize farmers represented the majority of the parties looking to drive the South African biofuels industry. But, two years after its release none of the ventures by these stakeholders have been able to take off, mainly due to the Strategy's restrictions on the type and source of feedstock as well as on the type of farmers whose participation in the industry would be subsidised.

This chapter presents a critical scientific-based analysis of the implications and results of South Africa's National Biofuels Industrial Strategy. Firstly an update is presented on the state of the biofuels industry in the country, highlighting the current production statistics and the major investment activities, and how these were affected by the release of the Strategy. Then the ambiguities in the Strategy are outlined and critically analysed with reference to the current state of the biofuels industry in the country. The chapter then concludes with the lessons to be learnt from the South African experience by those African countries which are yet to develop their respective biofuel policies.

Key words: Industrial biofuels strategy, underutilized land, former homelands, bioethanol, biodiesel, emerging black farmers.

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Introduction

In 2007 the South African government released the National Biofuels Industrial Strategy proposing a biofuels market penetration target of 2% of national liquid fuel supply by 2013. Before the release of the Strategy, commercial sugar producers and maize farmers represented the majority of the parties looking to drive the South African biofuels industry. However, two years after the release of the Strategy none of the ventures that were planned by these stakeholders have been able to take off.

This chapter presents a critical analysis of the key issues of South Africa's Biofuels Industrial Strategy and a discussion on how these could have contributed to the relatively slow development of the biofuels industry in the country. First a summary of the Strategy is given, followed by a critical analysis of specific issues of the strategy in connection with the current status of biofuel production in the country.

Summary of the Strategy

The National Industrial Biofuels Strategy initially aims at a short term focus (5 year pilot) to achieve a 2% penetration of biofuels in the national liquid fuel supply, or 400 million litres per year to be based on local agricultural and manufacturing production (DME 2007). This target represents about 30% of the national renewable energy target for 2013, set in the White Paper on Renewable Energy (DME 2003).

Contrary to the international situation, the main driver for the development of a biofuels industry in South Africa is neither the economic threat of erratically increasing oil prices nor a mitigation agenda for anthropogenic climate change, but the need to create a link between the country's 1st and 2nd economies[†]. Specifically, the government hopes to stimulate economic development and to alleviate poverty through the promotion of farming in areas that were previously neglected by the apartheid system, and in areas of the country that did not have market access for their produce, most of which are in the former homeland areas[‡] (DME 2007).

The strategy targets new and additional land, and estimates that about 14% of arable land in South Africa, mainly in the former homelands, is currently under-utilised and that only about

[†] *South Africa's 1st and 2nd economies: the 1st is integrated with the global economy through modern industrialization and produces the bulk of the country's wealth, while the 2nd is isolated from the first and global economies and is characterized by poverty, underdevelopment and marginalization resulting from years of apartheid rule.*

[‡] *Homeland areas (homelands) were semi-autonomous areas that were set aside for black South Africans under the apartheid regime, and only became integrated fully with the rest of South Africa in 1994*

1.4% of arable land will be required to achieve the 2% target. The government will support the development of the under-utilised land to a level that will compete commercially, and only agricultural products grown in the previous homelands by historically disadvantaged farmers will qualify for support (Ibid).

The Strategy proposes that support be done through existing agricultural support programmes as well as through support of investments made by the project in agricultural development. These are support programmes of the Department of Agriculture, including programmes for small-scale and emerging farmers. According to the Strategy, these programmes can be targeted to support farmers in crop selection, hedging, agricultural methods, logistics, infrastructure, research and development, and in negotiating contracts with biofuels manufacturers. The government will also ensure the training and capacity building of previously disadvantaged communities and emerging entrepreneurs to maximise transformation and the benefits in the biofuels industry (Ibid).

The Strategy further proposes a producer support mechanism to be used to balance the difference in fuel tax support to bioethanol and biodiesel by setting a fixed margin price. It is proposed that bioethanol receives a 100% petrol tax exemption, which amounts to about R 1.21 per litre⁵, whereas biodiesel should receive a 50% diesel fuel levy exemption, effectively amounting to R0.53 per litre (based on 2007 prices) (Ibid).

The Strategy recommends that the 2% target be achieved through B2 or 2% blending level for biodiesel and an E8 or 8% blending level for bioethanol. Mandatory blending is not recommended for this incubation phase (Ibid).

For food security reasons, the Strategy proposes that for the production of bioethanol, maize should be excluded in the initial phases of the strategy implementation. It is envisaged that the use of maize will only be considered *“once certainty on the ability of the currently under-utilised land to produce has been ascertained and the necessary measures are in place to guard against extreme food inflation”* (Ibid).

Analysis of Key Points

The 2009 report of the South African Biofuels Chair admits that progress, especially investment, in the development of the country’s biofuels industry has been very modest (Chair of Energy Research 2009). According to the report, the only real activities to date have been the approval of 3.2 Billion Rands (US\$437 M) by South Africa’s Industrial Development Corporation (IDC) and Energy Development Corporation (EDC) for two bioethanol plants that should collectively

⁵ Average 2010 Rand to 1US\$ exchange rate = 7.33 (X-rates 2010)

produce about 190 ML/annum of bioethanol from sugarcane and sugarbeet, and the planned erection of a 1.1 Mt/annum soybean crushing facility that will produce and distribute about 228 ML biodiesel by Rainbow Nation Renewable Fuels Ltd.

Indeed no commercial biofuel plants have been established in the country. Only biodiesel is currently being produced for the transport market, and this is from the more than 200 small-scale initiatives that use recycled vegetable oil, most of which were established long before the Strategy was released in 2007.

Looking back at the historical biofuel developments in the country, it is clear that the approval of funding for the two planned bioethanol plants and the soybean crushing facility is, in no way, assurance that commercial biofuel production will actually happen. There have been plans for commercial biofuel plants of this magnitude in South Africa before, but none of them actually took off. The question that must be asked is: Why is the establishment of the agriculture-based biofuel industry envisaged by the Biofuels Industrial Strategy of South Africa not taking off? The Central Energy Fund (CEF) Energy Development Corporation project manager, Sibusiso Ngubane, who was closely involved with the investigations into finding the right locations for the proposed biofuel plants, points to the exclusion of maize as feedstock for bioethanol production, while South Africa's Biofuels Chair seems to believe that it is because of the absence of obligatory nationwide blending (ibid, IPS News 2008).

In the following sections we discuss some of the key points of the Strategy that have the potential to render the country's biofuels industry inactive, or at least slow down its development.

Blending

There are ambiguities in the Strategy on how a B2 blending level for biodiesel and an E8 blending level for bioethanol will achieve the targeted 2% liquid fuel penetration or 400 million litres.

In 2007, the national gasoline consumption in South Africa was 11,558 million litres, while diesel consumption was 9,757 million litres (SAPIA 2009). In volumetric terms, 2% of the total liquid fuel consumption in 2007 was therefore 426 million litres, which is well within the 400 million litre target. A B2 blending level requires about 195 million litres of biodiesel; while an E8 blending level requires 925 million litres of bioethanol. A combination of B2 and E8 blends amount to 1,120 million litres of biofuels or a national liquid fuel penetration of 5.3% on volume basis or 3.4% on energy basis, both of which are much higher than the proposed 2%.

The absence of mandatory national blending levels implies that only environmentally conscious individuals and institutions will be willing to use biofuels in their vehicles. This means that the actual market for biofuels in the country is therefore very limited and fragile.

As regards blending of ethanol into gasoline, this appears to be heavily intertwined with a slowly evolving policy discussion on the issue of cleaner fuels. The government is caught between conflicting interests of the motor manufacturers (who want to deploy engine technologies that rely on the advanced Euro standards), and of the fuel's industry (who would have to invest heavily into modernising their refineries). Ethanol as oxygenate is important to future investment choices of the refineries. However, until these are formally requested by government with clear regulatory obligations to the fuels industry, any local investment into fuel bioethanol would remain in the risk of not securing a local market. This issue exposes a key shortfall of a supply-side driven policy intervention.

All of these issues regarding blending levels proposed by the Strategy can potentially contribute to the inactivity of the biofuels industry in the country, with respect to investment. Without clear understanding of major policy points and without a secure and sizeable market, investors will tend to be overly cautious, if not totally reluctant, to engage in any business venture.

Participation: Farmers and crops

Long before the release of the Strategy, commercial maize farmers were among the first groups of stakeholders to lobby for bioethanol production in the country. The most predominant early venture in this respect was that of Ethanol Africa, a corporation between maize farmers, technologists and specialists in the clean technology market. The main focus of Ethanol Africa was to unlock the value contained in maize through the conversion of maize to ethanol. In 2005 the company released its eight year plan to build eight grain processing bioethanol plants from 2005 to 2012 around the central and north eastern part of the country, starting with Bothaville in the heart of South Africa's maize triangle (South Africa Info 2009). By early 2007 the company had secured funding in the tune of US\$ 110 million for the facility in Bothaville and only awaiting the release of the final Biofuel Strategy which, to their disappointment, had not only excluded the use of their targeted feedstock, but had excluded the whole farming area of Bothaville as well as the majority of their farmer shareholders who did not come from previously disadvantaged communities (Business Report 2007). Needless to say, the venture could not take off.

The Strategy's requirement of only land that is in the former homelands implies that there cannot be any agricultural participation in this industry in two of the country's nine provinces; Northern Cape and Western Cape. In the Free State province, in which Bothaville is located, only the former Qwaqwa and part of the former Bophuthatswana homeland areas can participate according to the strategy.

During a study tour in the former homeland of Qwaqwa in the Free State, Letete discovered furthermore that not only do most of the black emerging farmers in these previously disadvantaged areas know nothing about biofuels, but they are also usually very sceptical of

such new ventures and generally not willing to engage in crops that they are not familiar with (Letete 2009).

All in all, the combination of the Strategy's requirements of participation in the agricultural sector by only previously disadvantaged farmers and the exclusion of maize as a feedstock has undoubtedly slowed down the establishment of an agriculture-based biofuels industry in South Africa.

Arable Land to be used

The Strategy also has ambiguities regarding the type of land that is targeted for biofuels production. The Strategy talks about "*new and additional*" and "*currently under-utilized*" land which is to be found in the former homelands, but there is no attempt anywhere in the Strategy to specify which land is being referred to.

In an attempt to understand the nature of land referred to in the Strategy, Letete investigated the agricultural area of Qwaqwa and discovered that there are three types of land in this area that could be classified as currently "*under-utilized*" (Letete 2009):

- *Land owned by emerging black farmers*: Since the late 1990s, the South African government has been awarding agricultural land to emerging black farmers, through various schemes, as a means of land reform. Because of lack of financial, management and, in some cases, technical skills, most of these farmers have been struggling to operate the farms effectively, sometimes even leading to total abandonment of the farms.
- *Communal land*: This is generally composed of a number of large pieces of land in the rural areas that are used by the whole community for agricultural purposes. All farming carried out in this land is purely subsistence in nature.
- *State land*: In the former homelands there are usually areas of state-owned land that are of agricultural quality which were meant to be demarcated for agricultural purposes, but were never demarcated under the apartheid regime. This type of land is usually left unused, illegally used by the community for grazing purposes or used for cultural activities.

The use of the first two types of land above for biofuel production is bound to conflict with the food industry. While the little produce that the emerging farmers are able to achieve at the moment is currently being sent to regional silos that feed into the national food industry, the land used for communal subsistence farming is vital for survival in these communities and in many cases the community cannot afford to use it for anything else. The formal demarcation of state-owned land, on the other hand, is usually a lengthy process wherein decisions rest with the highest national department authorities.

It is therefore unclear to many stakeholders which land is referred to by the Strategy as new, additional and currently underutilized, and this can potentially slow down the involvement of many interested parties in the biofuels industry.

Government Support

The extent of government support for biofuel production is also an issue in the Strategy.

Three recent studies, by the Bureau for Food and Agricultural Policy (BFAP) (2007), Nolte (2007) and Letete (2009), show that the economic viability of biofuels from locally grown energy crops may not be favourable. While the studies show that the economic incentives proposed by the Strategy for bioethanol production are enough to make sugarcane ethanol economically viable, they clearly show that the proposed biodiesel production incentives are definitely insufficient to make agriculture-based biodiesel ventures viable. Working with 2008 commodity and energy prices, Letete (2009) has shown that the proposed biofuel tax support leads to losses for the biofuel producer of R 3.70, R 3.13 and R 0.36 per litre of soybean biodiesel, sunflower biodiesel and canola biodiesel, respectively. This is mostly due to the high prices of virgin vegetable oil in the country, which are as high as three times the current retail price of diesel in the case of soybean. This is one of the major reasons why the production of biodiesel in the country has to date been primarily from recycled vegetable oil.

Furthermore, agricultural land owned by previously disadvantaged farmers in South Africa is mostly land acquired through the national Land Reform programme, and since the inception of the programme in the 1990s there have been support programmes in place to assist beneficiaries – emerging black farmers – to operate the farms sustainably, but these programmes have to date been very unsuccessful. From the late 1980s to the early 1990s, 114 black emerging farmers in the eastern Free State were awarded some 96,000 ha of land under the guidance of the Agricultural Development Agency of Qwaqwa (Agriqwa) (Business Trust and DPLG 2007). The Agriqwa scheme also included test farms which acted as support centres for these black farmers in terms of technical advice, training, planning and funding. In 1995, however, this scheme was terminated by the government, leaving the beneficiaries without any support. In 2008 more than half of these farmers were burdened with debt to the extent that some could not even operate the farms at all (Letete 2009).

The Comprehensive Agricultural Support Programme (CASP) and the Micro Agricultural Financial Industrial Scheme of South Africa (MAFISA) are the two existing support programmes that have been established to support agricultural land reform. CASP was setup as an initiative of the Department of Agriculture in 2004 to provide post-settlement support to beneficiaries of the land reform and other producers who have acquired land through private means, while MAFISA is a pilot initiative aimed at providing funding for on-lending to target markets in the quest to address the financial service needs of entrepreneurs in the second economy and to strengthen the developmental agricultural micro-finance system for their benefit. At a

parliamentary Monitoring Group briefing by the Department of Agriculture in 2008 regarding these two programmes, it emerged that both programmes were dismally failing to adequately support emerging farmer (Parliamentary Monitoring Group 2008). If government agricultural support for emerging farmers has never been successful since the inception of the land reform programme, there is no reason for farmers to believe that the support programmes will be effective for the establishment of the biofuel industry.

In summary, the financial support for biofuel producers is insufficient, especially for biodiesel, and it is uncertain how real the agricultural support will actually be.

Conclusion

This experience of South Africa offers many lessons to other African countries that are yet to develop or are in the process of developing appropriate biofuel policies. These lessons can be summarised as follows:

- There should be a thorough analysis of the required support from government, both in terms of value and quality, to ensure that support is well-suited for the establishment of the biofuel industry in the country. This analysis should also include a transparent assessment of government capacity to actually deliver such promises.
- There should be a detailed consultation process with targeted stakeholders in developing biofuel policies, and this should be accompanied by proper information dissemination and awareness campaigns, especially for farmers who are often isolated from cities and information technology, and have poor education backgrounds.
- Key terms of the policy should be clearly defined and main points clearly laid out, especially for lay farmers and investors for whom clarity is absolutely necessary if they are to engage in such ventures.
- The implications of voluntary blending versus mandatory blending should be clearly analysed, especially with respect to quality control issues and market creation for the biofuels.
- It is finally also vital to the success of the biofuel industry that any outstanding issues and conflicts between key players and stakeholders in the biofuel industry are addressed before the policy is put in place.

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