


Frequently Asked Questions ("FAQ") – 21 October 2013

Production of Bio Ethanol from Grain Sorghum

Developing a sustainable bio fuels industry in South Africa has been identified as an enabler of:

- Job creation
- Rural and agricultural development
- industrial development and manufacturing
- Energy security and cleaner fuels
- A cleaner environment and green economy

Mabele Fuels (Pty) Ltd. has answered the call of the South African Government for the realisation of this objective, through the requisite investment, skills, expertise and technology. Mabele Fuels is a South African company owned by Black Economic Empowerment groupings, emerging farmers, local investment institutions and private investors. Its business is the manufacture of fuel-grade ethanol from grain sorghum for sale in the South African bio fuels market. Grain sorghum is cultivated in South Africa's traditional summer grain areas, like the eastern Free State and eastern parts of the North West provinces, which receive summer rainfall. It is an ideal crop for bio fuels because it can withstand droughts and works well on fallow soil.

Mabele Fuels is at an advanced state of readiness to commence construction of a large-scale bio ethanol refinery (158 million litres per annum) in the Bothaville area of the Free State province. The project has enjoyed strong Government support and recognition. Mabele Fuels is expecting imminent Government approval by end of October 2013 to enable immediate implementation of its refinery construction program, for completion before the 1 October 2015 effective date of the mandatory bio fuels blending regulations. On 30 September, the Minister of Energy promulgated 1 October 2015 as the commencement date for the coming into effect of mandatory blending of petrol and diesel with bio fuels. There has since been significant public discourse and debate about the matter, which is likely to continue into the future as the local bio fuels industry develops toward this vision. There remains however a number of misconceptions, misperceptions and unanswered questions about the bio fuels industry and grain sorghum in particular as bio fuels feedstock. This is due to a lack of informed understanding and reliable information about the strategic benefits and opportunities of bio fuels to South Africa's energy and economic future.

As a leading local player and responsible corporate citizen committed to the development of South Africa's emerging bio fuels industry, Mabele Fuels will proactively and continuously seek to bridge the gap in available information and knowledge to result in more informed public discourse amongst key commentators, analysts, communities, the media, policy makers, regulators, political leaders, organised labour, the agricultural sector, environmentalists, interested and affected parties and civil society.





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1. **Q: Why is grain sorghum an ideal bio fuel crop choice?**

   A: The selection of bio fuels crops is highly dependent on geographic factors. For instance, for countries with ample water resources such as Brazil, sugar cane makes an ideal bio fuel crop. South Africa is a water scarce country and grain sorghum is the least 'thirsty' of the proven commodity crops grown in South Africa and can be grown without irrigation. Furthermore, South Africa does not have the most fertile of land compared to other countries. Grain sorghum is one of the few proven commodity crops that can be grown economically on marginal soil.

2. **Q: Why is the Free State Province ideally suited to cultivating grain sorghum?**

   A: The Free State Province has an arid climate and favourable soil conditions that are suitable to the cultivation of grain sorghum. The Free State Province currently accounts for 53% of South Africa's sorghum production. Grain sorghum can be economically cultivated on normally fallow land with relatively poor or marginal soils that would be unsuitable for economical maize plantings.

3. **Q: Will the production of bio ethanol from grain sorghum jeopardise water security?**

   A: No. Grain sorghum is a drought resistant dry land crop and is typically grown in dry areas that do not require irrigation. Consequently this type of grain sorghum has no impact on water security and is therefore an ideal feedstock crop for the production of bio ethanol.

4. **Q: Will the production of bio ethanol from grain sorghum reduce the amount of land available for farming food crops?**

   A: No. South Africa has approximately 14 million hectares of arable land of which 12.2 million hectares is under cultivation (DAFF, 2010b) and has historically produced large crop surpluses which are exported. This leaves 1.8 million hectares which are currently underutilized and which can be cultivated. However, Government is initially targeting a 2% ethanol/petrol blend which would require approximately 200 000 hectares of additional planting relative to the 1.8 million hectares of available underutilised land. There is consequently in the region of 1,6 million hectares of uncultivated land available for farming additional food crops if required.

5. **Q: Will the use of grain sorghum for production of bio fuels impact on food security?**

   A: No. The South African Government has taken particular care to ensure that the production of bio fuels in South Africa does not impact on local food security. Government has accordingly banned the use of maize to produce bio fuels. The use of grain sorghum to produce bio fuels is specifically allowed by Government, as it does not impact on food security. Government policy requires only uncultivated land to be used for farming crops for bio fuel production and adherence to this policy will negate the risk of farmers switching to grain sorghum. The use of maize is banned in the production of bio fuels, there is no risk that food security will be compromised by farmers switching from other food crops to grain sorghum. Leading agricultural organizations





like Grain SA as well as the Food and Allied Workers Union have recommended grain sorghum for use in the production of bio fuels as it will have no impact on food security. At a national blending rate of 2%, the World Bank has no concerns about the impact of bio fuels on food security in South Africa.

6. **Q: Will farmers switch production of food crops to produce grain sorghum for sale to bio fuels producers?**

A: No. There is no economic incentive for farmers to switch from maize production to sorghum production. Maize produces a higher yield per hectare than sorghum and the input costs of the two crops are similar. The net profit from sorghum production would be lower than from maize production if cultivated on the same land.

7. **Q: Will bio fuels push up the price of food?**

A: No. The use of grain sorghum for bio fuels production has absolutely no impact on food prices whatsoever as the additional planting of grain sorghum will not affect the supply of other food crops.

8. **Q: Will bio fuels accelerate the use of genetically modified organisms ("GMOs")?**

A: No. The majority of maize and sorghum grown in SA is already GMO (Wild, 2013). Grain sorghum on the other hand has been developed on the basis of hybrid cultivars i.e. from breeding and not genetic modification. But should sorghum go the GMO route, South Africans should keep in mind that most of the maize produced directly for human consumption is already GMO. The sorghum on the other hand would go to ethanol.

9. **Q: Won't the increased usage of land result in increased usage of fertilizers, which would in turn result in eutrophication (fertilizer runoff into rivers resulting in excessive plant growth)?**

A: No. Most of South Africa's eutrophication problems is in the larger metropolitan areas and seems to be as a result of phosphorous in detergents (VAN GINKEL, 2011). In fact recommendations have been made to limit the amount of phosphorous in detergents through regulation (VAN GINKEL, 2011). Regardless, fertilizer runoff is a problem if excess fertilizers are applied to land. If the correct amounts of fertilizers are applied, the crops utilise all the available nutrients with little to no nutrients running off into rivers. Mabele Fuels intends to assist grain suppliers with soil testing and modelling to ensure that the appropriate amounts of fertilizers are applied. Fertilizers are expensive so it makes business sense to reduce the amount of fertilizers applied to soil. Mabele Fuels also intends to engage with GrainSA and the Agricultural Research Council ("ARC") on conservation farming (lower inputs per hectare but equivalent economic returns) and share best practices with all grain suppliers. It should also be noted that challenges on farming inputs are not specific to the bio ethanol industry. The bio ethanol industry could result in 200,000 hectares additional land being planted – this is a small percentage compared to the 4 million+ hectares currently being planted. The crop production industry as a whole needs to move towards sustainable planting techniques.





10. Q: Will fuel retailers be in breach of the law if they can't secure enough bio fuels to sell at their pumps?

A: No. The mandatory bio fuels blending regulations apply only to fuel producers and not fuel retailers. It is therefore the obligation of the country's fuel producers to blend bio ethanol with petrol and diesel for supply to fuel retailers.

11. Q: What are the primary benefits of bio fuels to South Africans?

A: As production capacity in the bio fuels industry grows, South Africa's reliance on fuel imports will be reduced while security of supply will be strengthened**.** Increased levels of blending of mainstream fuels with bio fuels will lead to the availability of cleaner fuels that promote cleaner air and a cleaner environment.

12. Q: What are the rural development benefits and advantages of bio fuels in South Africa?

A: According to detailed studies, at the level of a 2% blend of bio ethanol and petrol, the bio fuels industry will produce up to 25000 jobs mainly in the agricultural sector. The development of bio fuels manufacturing infrastructure will necessitate billions of Rands in investment into rural economies. One of the key identified challenges facing emerging farmers has been access to markets. The bio fuels industry will also provide a large, accessible market for emerging farmers and beneficiaries of land reform. Job creation and rural economic development are consequently the key benefits of a local bio fuels industry.

13. Q: What is the policy and regulatory environment for the development and sustainability of the bio fuels industry in South Africa?

A: The South African Government is implementing a Bio fuel Industrial Strategy that aims to develop the bio fuels industry for the strategic purpose contributing to future energy security and diversification, rural job creation and development and environmental sustainability through cleaner fuels. Government has regulated the mandatory blending of bio fuels from licensed producers into petrol from 1 October 2015 in terms of the Petroleum Products Act (1977), by Ministerial proclamation in the Government Gazette (No. R719) on 30 September 2013. Bio fuels are also identified as a strategic sector in the Department of Trade and Industry's Industrial Policy Action Plan II and the Economic Development Department's 'New Growth Path' for transitioning to a job creating low-carbon green economy. Bio fuels also enjoy strong alignment with Government rural development and land reform objectives.

Government has committed to ensure the sustainability of developing of the infant bio fuels industry by introducing a bio fuels manufacturing incentive. This aims to support the South African Bio fuels Industrial Strategy of establishing eight bio fuels manufacturing plants. The fiscal incentive is similar to those introduced in other countries to overcome the initial capital cost and risks, as well as to keeping the price of petrol blended with bio fuels attractive to petrol producers and affordable to consumers.





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14. **Q: How will the bio fuels incentive be applied?**

A: Government will implement the incentive through a subsidy incorporated into the fuel price.

15. **Will the utilisation of bio fuels have an effect on the petrol price?**

A: Yes. The subsidy requirements for bio ethanol production will result, at most, in a 6c/l increase to the pump price of petrol. Apart from this limited increase up to a maximum of 6 cents per litre, the pump price of petrol will not be affected.

16. **Q: Will the utilisation of bio fuels affect the oil price?**

A: No. Bio fuel production has not impact on the oil price, which is subject to international supply and demand.

17. **Q: Where will blending take place and how will the quality of bio fuels be determined?**

A: South Africa's petrol producers will carry out blending either at refinery, or bulk fuel storage depots or a combination thereof. Bio ethanol will be tested at the bio ethanol refinery as per the relevant South African National Standards (SANS) which broadly complies with European Union (EU) requirements.

18. **Q: How efficient is the production of bio ethanol compared to traditional fossil fuel based petrol?**

A: There is 20% to 100% more energy produced in the form of bio ethanol compared to the energy put from fossil fuel. Bio ethanol production is not comparable to traditional fossil fuel based petrol production. Bio ethanol production is renewable and fossil fuel production is finite.

19. **Q: Will motorist have to fill their tanks more frequently?**

A: No. There will be no difference up to a 5% blend of bio ethanol with petrol.

20. **Q: Have developing countries similar to South Africa developed bio fuels industries and what impacts have these had?**

A: Brazil has had an enormously successful bio fuel industry to the extent that cars that can run on any blend of ethanol accounted for over 92.3% of new car sales in 2009. Brazil consumed over 22.45 billion litres of bio ethanol in 2010 in motor vehicles. This is relative to the approximately 12 billion litres of petrol that South Africa consumes annually. Ethanol as a fuel represents as much as 50% of the fuel used in the petrol fleet in Brazil. This has cushioned Brazil against oil price shocks, and has saved them billions of dollars in terms of avoided crude oil imports.





21. Does South Africa have the requisite skills to develop a sustainable and competitive bio fuels industry?

A: Yes. South Africa's agricultural sector has remained competitive despite competing against subsidised agriculture in the first world countries. The technology for bio fuel production is simple relative to the 'high tech' fuel industry in South Africa. Furthermore South Africa already has a thriving ethanol industry in the form of distilleries that produce ethanol for alcoholic beverages and industrial users using technology similar to what will be employed in the bio ethanol factories.

22. Does Mabele Fuels have the requisite skills and capacity to implement a project of this magnitude?

A: Yes. Mabele has a competent and experienced team with a diversified skills set ranging from petroleum and clean energy industries, engineering, legal and regulatory compliance, project management, finance and environmental. The company will on an ongoing basis assess and enhance its internal capability and staffing requirements. All risks have been assessed and mitigated by the company and its funders. The project is fully financed and the funders have carried out exhaustive due diligence on the project and are satisfied with the capabilities of the team to manage these and deliver on the project.

REFERENCES

1. DAFF (2010a) *Sorghum production guidelines*, DAFF, Pretoria.
2. DAFF (2010b) *South African Agricultural Production Strategy,* (last), from http://www.nda.agric.za/doadev/doc/igdp/agric_production_strategy_framwk.pdf.
3. Lemmer, W., Sihlobo, W. and Sundani, F. (2013) South African maize exports could increase, In SA, G. (ed.), Grain SA, Pretoria.
4. Pasensie, K. (2010) *South Africa's Land Reform Programme: Progress and Problems* (last 237), from www.cplo.org.za/?wpdmdl=19&&ind=0.
5. Reuters (2013) 'Exports deplete SA maize stocks', *Business Report*.
6. Tregurtha, N., Vink, N. and Kirsten, J. (2010) *Presidency Fifteen Year Review Project: Review of Agricultural Policies and Support Instruments in South Africa 1994-2009* Trade and Industry Policy Strategies, Pretoria.
7. VAN GINKEL, C. (2011). Eutrophication: present reality and future challenges for South Africa. Water SA [online], 37, 693-701. Retrieved from: http://www.wrc.org.za/Pages/DisplayItem.aspx?ItemID=9251&FromURL=%2FPages%2FDefault.aspx%3F
8. Wild, S. (2013) 'Debate rages over merits of GM food', *Mail and Guardian*.

ENQUIRIES:

ETHICORE Political Consulting

Ms Wisahl Jappie - Political and Communications Advisor

+27 (0) 21 424 1443 / 3125 biofuels@ethicore.co.za