
South Africa's Resources for Fuel Production

South Africa is a country struggling to meet its energy demands. Due to its rise in population and its climate problems as well as other factors, there is a need for the southern African country to focus on discovering or using as many ways as possible to meet the demands for fuel in the country. The country is now focusing on producing more renewable energy which is safe to the environment, South Africa producing bioethanol from Sugar Cane Bagasse (SCB) is one of the alternative sources of fuel, but they are still concerned whether it can be a reliable source to sustain them even in the future.

In the production of biofuels South Africa commonly use grain sorghum, sugar cane and maize is also a suitable feed to the process but it has been burned from being used in processes to produce fuels, it is no longer used in South Africa. Sorghum demands locally in South Africa has decreased leading to less production of sorghum, in the past the country used to produce large amounts of sorghum. Sorghum has drought resistant properties which make it a favorable raw material that they can use for biofuels, unlike maize which is affected by the country's climate. As for sugar, large amounts are produced in the country and 40% of the sugar is exported but sugar cane cultivation is limited as the crop requires large amount of water in a drought-stricken country. The country has now proposed the use of sugar beet as a possible feedstock to be used in the future.

The country is busy investigating possible things they could do to meet their demands which in turn will improve their economy. By comparing sugar cane and grain sorghum for bioethanol production, grain sorghum is very cheap with sugar being 25% more expensive in the same size of plants. While focusing on biodiesel soya beans and sunflower are possible feed, with soya beans having 50% greenhouse gas savings and its manufacturing cost higher than bioethanol. Biodiesel production creates 20 067 jobs per plant whereas bioethanol production creates 8 427 jobs per plant.

Sugar processing industries in south Africa generate bagasse at a yield of 0.30 ton per ton of cane processed which is generally low, south Africa sugar mills have poor efficiency if processes are coupled with low energy conversions then no surplus bagasse is generated and then no electricity export. If sugar mills with efficient conversion systems from biomass to energy, then excess bagasse is available. This excess together with those from post-harvest sugarcane could provide feedstock for biofuels production. There are costs associated with the utilization of this residues such as transport and cost for upgrading the plants, after all this cost are lower than purchasing biomass.

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Capital cost of converting a sugar mill to make it energy efficient would be R4billion, ensuring that bagasse is given a reasonable value would contribute to rise in sugarcane price which will make an increase on sugarcane prices. Tongaat hull let a south African company has a plan to see 4-5 of the existing sugar mills to make a large-scale bioethanol plant also using sugars from other mills and it would allow the country to convert its export sugars to bioethanol and would provide E6 ethanol if all mills are running at full capacity

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