



Biofuel The Solution To Kenya's Oil Crisis

By Kibiwott Koross

May 13, 2011

"We have to look for our own fuel to avert the crisis," Energy minister Kiraitu Murungi told Parliament two weeks ago as the prices of fuel soared.

While responding to MPs who wanted the minister to explain what was happening in the oil sector, Kiraitu said things won't change unless the country finds its own fuel.

But despite several oil exploration attempts, Kenya has not been successful which means we will still rely on the imported fuel whose prices have surged to an historic high.

A viable alternative is biofuel, which according to experts, is the only future energy source which has been ignored by the government. "We are only remaining with one alternative; biofuel," says Dr Bernard Muok who is a Director of Programmes, African Centre for Technology Studies (ACTS).

Muok says Kenya is sleeping on untapped biofuel which if exploited can steer the country's economic growth to unimaginable heights. "We have relied so much on oil. A lot of money has been used trying to drill oil with no success," says Muok, "If this money was converted to production of biofuel, we could be talking of other things by now; not a fuel crisis."

The government for many years has been trying to explore oil in different parts of the country with the most recent being in Isiolo where Kenyans' hopes were raised as the exploring firm gave indications that traces of oil had been found.

Already the exploitation of biofuel in some parts of the country has been successful. For instance, motorists are already using biodiesel from a project in Naromoru, near Nanyuki Town. Help Self Help Centre, a self-help group in the area, is currently producing between 600 and 1,000 litres of biofuel daily. The fuel is extracted from locally available seeds such as croton, cape chestnut and castor seeds.

Currently, a litre of biodiesel fuel costs Sh95 which is Sh10 lower than that of diesel currently retailing at Sh105 in Nairobi. "I believe biofuel is the only solution to the country's fuel crisis," said Cosmas Ochieng, the managing director of Help Self Help Centre. "The government should open up and support those venturing into the production of biofuel to avert more fuel crisis."

The alternative fuel has seen farmers in Naromoru abandoning what they normally cultivate to turn to the new crops for the precious seeds, said Ochieng. "Farmers are making good money here," he said on phone from his Naro Moru office. "Many of them (farmers) are now planning to increase the acreage under the plants which initially was seen as a useless tree."

The seed is first cleaned and then pre-heated in a conditioner to allow the seeds to be flaked in preparation for further cooking. The flaking is to rupture the oil cells. It eases the next steps of the crushing process, and if available, the solvent extraction.

The flaked seed is then fed into a cooker, where the seeds' moisture levels are reduced and temperature increased in preparation for pressing. Inside the press, a specially designed worm configuration compresses the seeds, allowing the controlled release of oil. The oil is drained from the bottom of the press while the cake is conveyed from the discharge end of the press.

The crude oil at this point contains solids that are removed using a vibrating screen or a horizontal centrifuge, also called a decanter. Cake from the discharge end of the press goes through a cake breaker and cake cooler.

Ochieng says the group is seeking partnership with well-wishers to expand its fuel production. "We are planning to go large scale," he said, "but we have been incapacitated by materials."

He said for their factory to produce more biofuel, they require modern machines since the ones they are currently using are very old. "We also think of paying our farmers well," he said. Currently, a kilo of the seeds with shells costs Sh6.

Ochieng says the government should shift to biofuel to tame the never-ending fuel crisis in the country. "By investing on biofuel, the country will save a lot of money," he says, "what we witnessed last week was just a tip of the iceberg of what will unfold in the future." Another plant which can be extracted for biofuel is the infamous jatropha plant.

Although the plant has received a wide condemnation from environmentalists, it has been a darling in other parts of the world as a source of biofuel. In Brazil, for example, jatropha is being promoted as an easily grown biofuel crop in the country.

Currently the oil from jatropha, scientific name *Jatropha curcas*, seeds are used for making biodiesel fuel in Brazil, where it grows naturally and in plantations in the Southeast, and the North/Northeast Brazil.

In the beginning of the year, President Mwai Kibaki while having bilateral talks with Brazilian president Lula da Silva at State House, Nairobi, the President said Brazil would help Kenya in her quest for exploration of biofuel. "Kenya is especially keen on exploiting Brazilian advances in the area of biodiesel technology," President Kibaki said. "Brazil is a world leader in this field and Kenya stands to gain as we seek ways of becoming more efficient in our management of the energy sector," said the President.

But even with the current fuel crisis, despite ordinary Kenyans feeling the pinch, the President has never uttered a word on the plans for the shift to biofuel.

Brazil is the world's second largest producer of ethanol fuel and the world's largest exporter. In 2009, Brazil produced 24.9 billion litres, representing 37.7 per cent of the world's total ethanol used as fuel.

The growing of jatropha in Kenya has not been received well with environmentalists saying more research is needed before the plant is grown for commercial use. "It is not only jatropha that is expected to be used to produce biofuel," says Muok of the African Centre for Technology Studies, "there are reports that the plant is not viable in Kenya. We should try other alternative plants. Cotton also has oil which can be a bonus for farmers." He says farmers can earn from the wool and the seeds thereby increasing their income.

Already foreign investors are streaming into the country to seize the impending lucrative opportunity which has been described as another 'scramble for Africa' by researchers.

A study by an environmental group says biofuel demand is driving a new "land grab" in Africa, with at least five million hectares (19,300 sq miles) acquired by foreign firms to grow crops in 11 countries.

The contracts by European and Asian companies for land to grow sugar cane, jatropha and palm oil to be turned into fuel will involve clearing forests and vegetation, taking land that could be used for food and creating conflicts with local communities, Friends of the Earth group said in the study.

The report said Kenya and Angola each had received proposals for the use of 500,000 hectares for biofuels and there was a similar plan to use 400,000 hectares in Benin for palm oil.

A multibillion project is currently going on in Tana Delta region with more than 50,000 hectares of land set to be under the crop. It is owned by an American biofuel firm. The first phase of the project would be on 10,000 hectares in one of the six ranches leased by Bedford Biofuels Company for Sh1.4 billion. The lease runs for 45 years.

Conservationists have, however, warned that the Environmental Impact Assessment report had failed to consider some key issues as required before the project could begin.

They said the project was being conducted at ranches and may affect the habitat for livestock. They added that the soils were not tested to find out whether they are fit for jatropha farming.

John Mitchell, the Bedford Biofuels General Manager to Kenya, said his company had leased six ranches - Idasa Godana, Giritu, Haganda, Kibusu, Kitangale and Kondertu - an estimated 64,000 hectares.

Phase one of the project comprises 10,000 hectares and would be at Kitangale Ranch, phase

two will cover 30,000 hectares on the other four ranches while phase three would complete the remaining 24,000 hectares.

Mitchel said the company will spend Sh270 million in the first four years to support development projects in the area for the benefit of both the ranch owners and the locals. He said they would also use the 10,000 hectares in the first phase and the other 9,000 hectares to be used on humanitarian developments such as eco-tourism, beekeeping, roads projects, hospitals and conservation of the environment.

The general manager said the initial plan would be to begin on a 200ha area, an estimated 500 acres using 10 samples of the different species of jatropha plant to see which one would work better.

Proponents of biofuels argue they are renewable and can help fight climate change because the growing plants ingest as much carbon dioxide from the air as the fuels made from them emit when burned.

Already vehicles belonging to international organisations in Kenya are using biofuel. The United Nations Environmental Programme (Unep) has contracted a biofuel firm to supply them with biodiesel.

But as the pump prices continue being volatile and the country's efforts to explore oil continue to hit the wall, time will only tell if Kenya will invest heavily on biofuel because that could perhaps be the solution to Kenya's fuel crisis. ■

Kibiwott.koross@nairobiatar.com