



BIOTECHNOLOGY: BUILDING A BETTER WORLD

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DR. "COLD-FX" JACQUELINE SHAN
CEO,
Afexa Life Sciences



FUELING THE FUTURE

Bedford Biofuel's efforts to create **renewable and sustainable forms of oil in Kenya**

PHOTO: JOHN MITCHELLE



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INSPIRATION



SUSTAINABLE SAPLINGS
Jatropha seedlings at about 2 weeks.
PHOTO: JOHN MITCHELL

Question: How can a species of tree bring enormous change to an impoverished region in Kenya?
Answer: Oilseed initiatives provide renewable energy—and profits to the community.

FUELING THE FUTURE: BEDFORD'S JOURNEY

HOW WE MADE IT

Three years ago in Kenya, the words “Bedford Biofuels” had no meaning for the people of the Tana River region, a long stretch of land in the south-east corner of the country. Today, the company is a household name there—one that symbolizes hope for the people and the planet.

Bedford Biofuels is growing Jatropha curcas on leased land in Kenya to provide biofuel to Africa and beyond. The company was launched in 2008 and now has sales channels in Canada, Asia and the Middle East to fund its biofuel operations in Kenya.

Jatropha is a robust, drought resistant tree, which begins to flower within six to eight months of planting and matures within three to four years. The tree continues to produce non-edible nuts, which contain 34 to 45 percent oil by weight, for up to 50 years.

Powering possibility

Bedford Biofuels' President and CEO, David McClure, sings the praises of Jatropha, not only for its value as a biofuel feedstock, but for what it represents for the 89,000 people on Bedford's leased land in the Tana River region.

“Jatropha has been through years of tests and trials,” McClure says. “It has had tens of millions of dollars of research poured into it; NASA has flown it to space to test the impact of zero gravity on its growth, it has properties that can be used in the production of pain killers and other medications, and above all, it produces a clean oil that is superior to fossil fuel—an oil that is not derived from a food crop, but from a non-food biofuel. This is the evolution of biofuel.”

As for the impact Jatropha will have on the Tana River region, McClure says Bedford and the locals in Kenya see a bright future together.

“We are reforesting Kenya with Jatropha,” he says. “Once this semi-arid land has Jatropha growing on it, the trees will act as carbon sinks. This is a tree that produces non-edible nuts that we harvest twice a year for oil. The trees are planted on underutilized land that has sat idle for generations. We will produce green oil, intercrop our trees with food crop for the local people and provide employment in an area where only five percent of people have work.”

Jatropha is a drop-in replacement for diesel, which means its use does not require engine modification. Jatropha oil can be blended for use in automobiles, mining equipment and locomotives, and most recently was certified for use in aircraft. On July 1 of this year, ASTM International,

an American organization that sets worldwide technical standards for the airline and other industries, gave approval for carriers to mix kerosene with non-food plants like Jatropha, and organic waste to power planes.

While Jatropha has been tested for use in aviation since 2008 by Air New Zealand, Continental, Boeing, Japan Airlines, Lufthansa and others, the ASTM approval is a milestone for Jatropha, as is the recent commitment from Aeromexico to use a Jatropha mix for weekly flights between Mexico and Costa Rica. On August 2, the airline successfully flew the world's first transatlantic flight using biofuel with a 70:30 kerosene-Jatropha mix. The flight was from Mexico City to Madrid.

An anticipated need

According to US-based clean-tech analysis firm Pike Research, the total market for renewable jet fuel will reach more than \$100 billion by 2020, requiring the production of more than 30 billion gallons of sustainable fuel per year.

In the spring, Bedford Biofuels received its much anticipated Environmental Impact Assessment license from NEMA (National Environment Management Authority) Kenya and started nursery preparations in late July. The nursery is now teaming with green Jatropha sprouts, which will be transplanted in November.

The backlash

The imminent planting season has the company buzzing, however, the challenges of operating in Kenya have been numerous —some anticipated and others unforeseen. Dustin Mitchell, Managing Director of Bedford Biofuels, said he has been shocked and disappointed by opposition from groups like Nature Kenya, especially in contrast to the support the company has received from Tana River region residents, government officials and organizations like NEMA.

“From the beginning, Bedford Biofuels has been committed to doing everything by the book in Kenya, working with existing groups, meeting all environmental and social interests, and acting in the interest of the people living in the Tana River region,” said Mitchell. “We hold regular meetings with the locals who will be affected by our project and they were outraged by the lies some of these groups have been publishing about Bedford.”

“These groups have no alternative plan to combat the poverty and poor conditions of the people in the region. They oppose almost all development and have no plan to help the people. They have used the local and international press to spread false information about the project, even though Bedford is widely supported in the



WELL-OILED
The trees continue to produce oil for up to 50 years.
PHOTO: S. AZIZ

region by the locals.”

He said some groups are claiming Jatropha is not a feasible biofuel feedstock and should be planted only as a fence.

“The lies are just so easy to disprove,” said Mitchell. “Planes are flying with Jatropha oil. Jatropha is being grown by 700 farmers in the Tana River region and they are getting oil. Yet these groups claim it doesn't grow. Recent reports claim that two million people in Mozambique use renewable energy, including Jatropha seedcake. Sun Biofuels Mozambique, in fact, just shipped 30 tonnes of Jatropha oil to Europe for evaluation by Lufthansa.”

Local support

Mitchell said a meeting of all local stake holders and government officials was called by Bedford to address the false allegations. In spite of the lies and misinformation, local support was overwhelming. Omara Kalasingha, Chairman of the Kenya Wildlife Forum, the Tana Delta Environmental Management Forum, and the Wildlife Resource Center, said he has the Tana Delta at heart and wants to conserve the wetland, and he supports Bedford's project in Kenya.

“Bedford is not planting in the wetland, they are on the dry land. Bedford also wants to protect the wildlife corridor, as we want to protect the wildlife corridor,” said Kalasingha. “This land belongs to the people, and they have given it over to Bedford Biofuels to plant. They support this project going forward. We support this project going forward. The few who oppose this project are not basing their decision on the truth.” McClure said he is outraged by the blatant lies being spread by some groups in Kenya, especially when Bedford is essentially a reforestation project.

“Bedford Biofuels is standing up

as the voice of the people who will be employed by us, whose land we are leasing, who have looked me in the eyes and thanked me for offering their children a future,” said McClure. “The people of the Tana River region are tired of being misrepresented by those who are robbing them of a future. Their actions are a true crime against humanity.”

He said it is criminal that some of the conservation and aid groups are wasting their time spreading lies about Bedford when there is suffering in Northern Kenya, which is experiencing drought and has been flooded by tens of thousands of Somali refugees filling border camps.

“Since getting into this business in 2008, the idea of aid has weighed heavily on my heart,” said McClure. “Billions of dollars have been poured into Africa and people are still starving. Aid does not work. We believe in working with local people on viable projects so they can help themselves. The old adage of ‘give a man a fish and you feed him for a day, teach a man to fish and you feed him for a lifetime’ is so true. We believe in empowering people to help themselves. We are on the ground in Kenya teaching them to fish right now.”

“Sustainable energy projects, coupled with humanitarian initiatives, could very well be the solution to the desperation in Sub Sahara Africa. The mentality of some of these narrow-minded organizations has to change, who are deliberately sabotaging the promise of prosperity and stability for the local people.”

Bedford, along with its biofuel operation, is bringing its EMPOWER (Every Member Prospers On World Energy Resources) program to Kenya. EMPOWER uses a percentage of the total plantation budget to bring improved housing, health care, clean water, improved education and food

security to the region.

McClure said he is forever grateful to the people of the Tana River region for their continued support of Bedford Biofuels, and to the government of Kenya, which has embraced Bedford's vision from the beginning.

Home-grown options

Kenya is one of many countries committed to reducing its dependency on foreign oil by embracing alternative energy. Kenya's Vision 2030 is committed to transform Kenya into a rapidly industrializing middle-income nation by 2030 and supports an alternative energy future. Government mandates around the globe are calling for a reduced carbon footprint to combat global warming. Biofuel is widely seen as the solution to high oil prices due to political instability in the Middle East and an overall increase in energy demand.

According to the September edition of Discover magazine, global investment in clean energy last year was around \$243 billion, with the Chinese leading the investment pack.

McClure said Bedford's sales channels in Canada and Asia are running, and the company is talking to potential joint venture partners during an upcoming road show in Asia.

“Everyone knows the limitless possibilities associated with alternative energy today,” he said. “When we talk to investors, they understand our vision and they want to be part of the green revolution, they want Bedford to employ Kenyans so they can help themselves to a better life and a greener planet. That's the business model. That's why Bedford is here. No self-serving, malicious groups are going to steal a brighter future from the people of the Tana River region.”