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A ground breaking approach to the biodiesel market



VIRIDAS PLC

- Demand for petroleum increases whilst fossil fuel oil production declines.
- The World **needs** sustainably produced renewable fuels.
- Viridas have identified the feedstock, the country and the methodology for industrial level production of crude oil for Biodiesel.
- With the Jatropha tree Viridas will create managed plantations that will re-forest areas of Brazil and supply European and US Biodiesel markets with crude oil.
- Viridas will build an eco-friendly, financially successful business for the 21st century

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The seeds of future success

The world is changing, and nowhere more dramatically than in the need for fuel supplies that minimise the impact of road traffic and energy production on the global environment.

One of the most important of these fuels is biodiesel, an alternative to fossil fuel diesel that is becoming established in Europe and also finding markets in the USA and the new emerging economies. Europe in particular has committed itself to a considerable increase in the use of biodiesel over the coming decades.

Much of the current production of biodiesel comes from crops such as soybean, rapeseed and palm, but there is another plant, in fact a tree, which is yet to be fully exploited for its exceptional qualities in the sustainable production of crude oil.

This tree is called Jatropha, and it is the crop that has been identified by Viridas as having the potential to transform the efficiency and sustainability of biodiesel production, whilst simultaneously enhancing the financial prospects of the company. Viridas are investing in a product for which there is an assured and overwhelming demand, not just in the short term but for the whole foreseeable future.

Viridas's unique approach to an unrivalled opportunity

The qualities of Jatropha as a sustainable feedstock for biodiesel production are well recognised, but what is not so well understood is how to maximise productivity of the crop whilst maintaining a positive effect on the immediate environment. Viridas are in the process of research and development which will revolutionise both the yields and the methods by which Jatropha is grown and harvested.

Viridas have also identified what they believe to be the best country in the world for the establishment of Jatropha plantations. It is a country that has the ideal climate, sufficient sunshine, enough rain, fertile land, good infrastructure and a stable government. That country is Brazil: one of the four leading emerging economies and the indigenous home of the Jatropha tree.

Viridas's Jatropha plantations will be on sustainable land that has long been cleared, effectively re-foresting the area. From whatever angle this project is regarded the picture is positive. The country, the company and – dare we say it – the world, are all destined to gain from the cultivation of Jatropha.

Viridas will revolutionise the production of Jatropha through its own owner managed plantations



The end of the petroleum age

As the worldwide population increases and as standards of living improve in emerging economies with more and more people moving into cities, the demand for petroleum products grows ever higher.

In fact, it is a rising demand that cannot be sustained. Fossil fuels are non-renewable resources that take millions of years to form and reserves are being depleted much faster than new ones are being created. In other words, the world is running out of petroleum.

Added to that is the immense impact that the burning of fossil fuels has on the environment. In the United States alone, more than 90% of greenhouse gas emissions come from the combustion of fossil fuels.

The threat of a crisis is being averted by the forward thinking of some administrations, most notably the EU who have identified the need for renewable, carbon neutral fuel production to combat both supply shortages and global warming. Biodiesel is a key fuel in the strategy for the future.



Dawn of a new era for biodiesel

The advantages of Jatropha biodiesel over petroleum diesel are considerable, with few drawbacks. The clearest area of preference is that it is sustainably extracted from the Jatropha tree which is a renewable source: the trees living for over forty years. Because the trees absorb carbon they help offset the carbon dioxide emissions from burning the resulting fuel. This is the kind of environmental equilibrium which makes Biodiesel from Jatropha so attractive to an increasing number of enlightened administrations. It also produces significantly lower levels of smog causing pollutants and the Sulphur that causes acid rain.

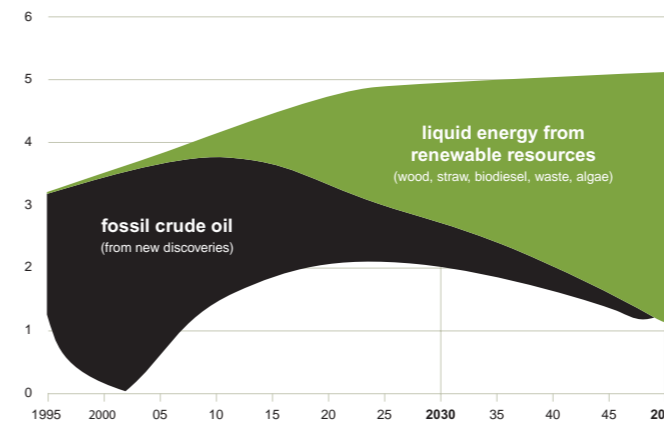
Yet for the user, Biodiesel is an almost painless conversion. It can be dispensed from existing petrol pumps with only minimal engine modifications, and its higher flash point and ignition capabilities means engines run more efficiently and cleanly.



Little wonder that the EU is so enthusiastic about biod fuels, setting a mandatory target of 5% usage by 2010, expected to rise to 10% by 2020. The USA and rapidly growing Asian markets will also see increasing pressure for clean and renewable energy sources. This is an opportunity which cannot be ignored.

World crude oil demand

(billions of tonnes / year)



In 2003 the European Union, driven by concerns about Carbon emissions and global warming, mandated that the EU would go 2% bio fuel by 2005, rising to 5% by 2010, and to 10% by 2020.

biodiesel

will be THE fuel of the 21st Century

The best source in the best location



Jatropha. A new generation biofuel crop.

For years the full capabilities of the Jatropha tree have been unrealised with its only uses historically being medicinal ones. But now the world is waking up to its potential and a wide range of interested parties from Bob Geldof to major oil companies are becoming excited by this once little known plant.

Viridas have a head start in the field. They have already made a great deal of progress in establishing a trial plantation, selecting trees and seeds with the highest oil yields, analysing the optimum configuration for planting and the best methods of husbandry

It is no exaggeration to say that Jatropha may well be the ideal biofuel crop. This is a second generation feedstock, which unlike more traditional crops such as palm, rapeseed or soya, is extremely hardy and long living with the ability to enrich the soil and prevent erosion by dropping its leaves. With oil content of up to 40% in its seeds, it is a supremely productive source of biofuel.

The Brazilian advantage

Although a hardy tree which is already being grown commercially in various parts of the world including India, Viridas have invested the time and money in identifying the optimum world location for cultivating Jatropha, taking into account the climate, the soil, the availability of suitable sustainable land along with the politics, know how and infrastructure of the country.

The location selected was Brazil. This is the ideal country for Jatropha cultivation, partly because the tree is indigenous but also because all the ancillary requirements are met.

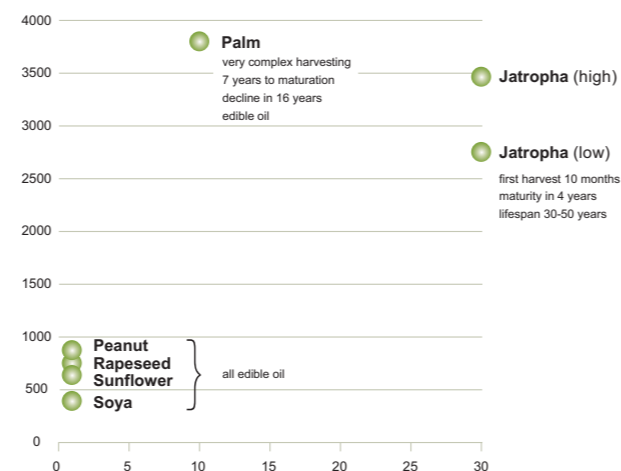
To begin with there is a surplus of sustainable land which enjoys perfect climatic conditions for the growth of an energy crop, including copious sunshine, extremely fertile land, enough rain to negate the need for special irrigation, and a great deal of expertise thanks to the country's long association with commercial agriculture.

From a commercial point of view, Brazil is an advanced nation and one of the four fastest developing markets in the world, destined to become a dominant force in the international economy. With all major political parties supporting market growth, along with a sophisticated modern banking system plus governmental and university departments dedicated to agricultural research, it means Viridas can rely on a supportive and stable environment in which to create a successful business.

Map of Brazil - important location details to be identified by client

Crude oil yield by crop

(yield per hectare / year)



Jatropha has the potential to become one of the world's key energy crops

Planned management means higher productivity

Our stake in controlled production

The Viridas approach to its plantations is not to be confused with those of Jatropha traders whose businesses are based on outgrower schemes, where independent farmers are contracted to produce as they think fit the seeds which the trader then purchases.

From the outset Viridas has identified the need for its own managed plantations to control the agronomy so as to maximise the quantity and quality of the yields. This means investing in land, a workforce and machinery. All of which will ultimately pay dividends in their capability to deliver a consistent supply of a high quality sustainable product.

Jatropha is a crop which has only recently attracted a high level of commercial interest, so there is no precedence for its cultivation at industrial levels. Again this is where the owner managed route is vital. There is still a great deal of work to be done to understand the best methods of cultivation, and Viridas is undertaking pioneering research and testing.



Building a foundation of knowledge

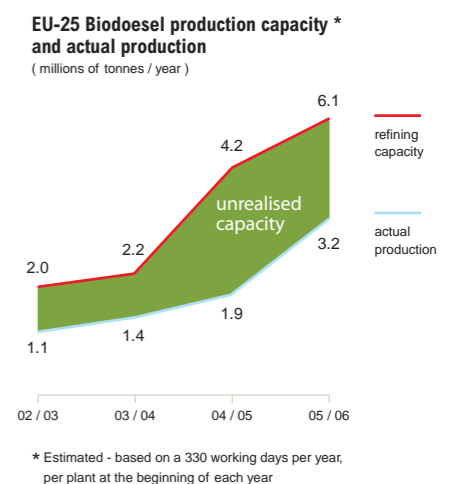
Viridas is working in partnership with Phoneutria, a Brazilian company which is linked to Foundation Biominas, an institution with highly qualified scientists and professionals in areas such as Biology and Microbiology, to develop the best Jatropha cultivars for their business. It means Viridas will have access to uniquely productive varieties.

Jatropha is an extremely resilient tree but another angle of research has been into the optimum methods of land preparation and maintenance, including the use of fertilizers, pesticides, pruning and so on. This is currently being tested in a self managed trial plantation at Minas Gerias in North East Brazil.

But perhaps the single most important aspect of the whole operation will be the harvesting. In other Jatropha plantations around the world this is done by hand, dependent on large local labour markets, but Viridas are focusing on a significantly more efficient method. The harvesting will be done mechanically using "shaker" picking equipment that is being specifically developed with existing manufacturers. This will ensure rapid, large scale harvesting that is vital to avoid the deterioration of the crop before refining.



Viridas is one of the only companies in the world to establish an owner managed plantation business for cultivating Jatropha



For a sustainable future

Combining profit and ethics

Ethical investing – the principle of creating wealth responsibly – is becoming more and more engrained in all categories of business venture, and none more so where land use is combined with fuel production. Viridas is fully committed to the whole principle of Socially Responsible Investing.

Viridas will ensure that all their plantations will be on sustainable land that has long been cleared so that by growing Jatropha trees they will be effectively re-foresting the area. As the plants grow they naturally absorb CO₂ from the atmosphere which helps to balance out the carbon dioxide produced from burning the resulting fuel. Biodiesel from Viridas's Jatropha plantations will therefore be effectively carbon-neutral.

Jatropha is a non-food crop which means that, unlike some crops used for biodiesel production, it will not be competing for food use. Viridas's business will be able to deliver economic and social benefits for the region, whilst at the same time generating high levels of profit and returns for our investors.

The unfilled gap in the market

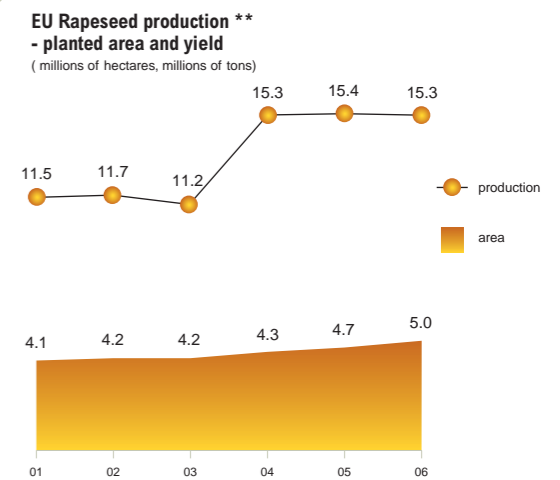
The demand for crude oil for biodiesel is continually growing in the European Union, yet in the last few years the total area planted with rapeseed has grown only marginally. Excess refining capacity is already in place, and the additional supply will have to come from outside the borders of Europe.

With geopolitical pressure growing ever stronger on governments worldwide, the market for liquid energy from renewable resources is expanding rapidly, and with crude oil supplies not meeting the demand, prices show a great deal of buoyancy in this sector.

Viridas are perfectly positioned, having made sound investment decisions, to capitalise on the development of sustainable, industrial scale owner managed Jatropha plantations which will help bring a cleaner fuel to the roads of Europe and the world.



The market for biodiesel has two powerful drivers: environmental and geopolitical



** Represents more than 80% of total crude supply
Source: UFOP, European Biodiesel Board, USDA, team analysis