



D1 Oils plc

Submission Energy and Transport Directorate-General European Commission

Background on D1 Oils PLC

D1 Oils plc is a UK-based global producer of biodiesel from renewable energy crops.

We are building a global supply chain and network that is sustainable and delivers value from “earth-to-engine” via:

- Agronomy - the science, planting and production of crude vegetable oils
- Refining - the designing, building, owning, operating and marketing of biodiesel refineries
- Trading - the sourcing, transport and trading of seeds and seedlings, crude vegetable oils and biodiesel

Our primary feedstock is *Jatropha curcas*, a tree that grows widely in the developing world. *Jatropha* seeds produce high yields of non-edible vegetable oil that can be refined into biodiesel. D1 selected *jatropha* for its productivity, longevity and ability to grow in the poor soil conditions often found in developing countries. *Jatropha* does not compete for land with vital food crops. We are building a global supply chain to harvest *jatropha* oil from D1 plantations across the developing world, refine *jatropha* and other vegetable oil feedstocks into biodiesel using our proprietary refinery technology, and to source, trade and transport crude vegetable oils and biodiesel to market.

D1 currently operates 32,000 tonnes of biodiesel production capacity at its site in Middlesbrough in the UK. We expect to have 72,000 tonnes operating by the end of 2006. In 2007 we aim to install a further 150,000 tonnes of UK-based biodiesel refining capacity.



Executive Summary

The introduction of the European Union Biofuels Directive, adopted in May 2003, has been fundamental in stimulating the biofuels market in the UK. The directive reference value of 5.75% for the market share of biofuels in 2010 has been translated nationally in the UK as 5% biofuels by 2010 under a Renewable Transport Fuel Obligation (RTFO). In the UK 5% biodiesel blend under the RTFO will require around 1m tonnes of biodiesel by 2010.

UK agriculture can produce a significant proportion of the UK's demand for biodiesel and bioethanol, however it will be impossible, even with the allocation of set-aside land to biofuels production, to meet all demand from domestic agriculture. A mix of home production and imports will be needed.

D1 Oils has already invested significantly in both upstream planting of energy crops in developing countries to produce biodiesel feedstock, particularly *Jatropha curcas*, and downstream refining technology. We believe that this investment will enable us to supply a proportion of the 1m tonnes required in the UK from our own feedstock supplies by 2010 and to supply further demand should the government introduce a higher level of obligation. We also expect to supply biodiesel into the EU continental market.

Research undertaken with the cooperation of D1 indicates that the production of jatropha derived biodiesel has a primary energy requirement of slightly less than Used Vegetable Oil (UVO) and 40% that of rapeseed methyl ester (RME). Even when the energy required to ship jatropha biodiesel from developing countries where it is produced to the UK where it is consumed is taken into account, jatropha requires a lower primary energy requirement and results in lower GHG emissions than RME. Importing jatropha feedstock to the UK does not therefore create an unacceptable energy or emissions balance.

D1 supports the creation of an environmental assurance scheme as proposed under the RTFO to demonstrate sustainability of supply and urge the European Commission to encourage such schemes. In jatropha we have an energy crop whose environmental impact is positive.

D1 welcomes the European Commissions review of the EU Biofuels Directive. We see this as a significant encouragement to the European and UK biofuels industry, whether the feedstocks come from domestic sources or overseas. A decision on the next step up of the target in terms of a higher % and a firm date for the increase would be of benefit to the industry.

Importing jatropha feedstock from the developing world offers greater security of energy supply while benefiting considerably the agricultural sectors of developing countries.



D1 Responses to Specific Issues

1. Is the objective of promoting biofuels still valid?

The objective of promoting the use of biofuels to contribute to meeting “...*climate change commitments, environmentally friendly security of supply and promoting renewable energy sources ...*” while offering “...*the prospect of new economic opportunities for people in rural areas in Europe and developing countries*” is the core of D1’s vision.

Even with high oil prices it is essential that fiscal policy support for biofuels is maintained and progressed at the EU level to sustain and encourage investment in this important market.

D1 Oils has already invested significantly in both upstream planting of energy crops in developing countries to produce biodiesel feedstock, particularly *Jatropha curcas*, and downstream refining technology for use in the UK and for export.

Jatropha is an energy tree crop that has the necessary characteristics to become a major biodiesel feedstock:

- Potential for high yields – up to 40%
- Outside food chain: not an edible oil
- Grows on non arable land – no threat to food crops
- Hardy and long life span – up to 30 years
- Oil characteristics favourable for biodiesel
- Useful byproducts, e.g. seed cake for fertiliser



Importing jatropha feedstock from the developing world offers greater security of supply to the UK in terms of energy supply while benefiting considerably the agricultural sectors of developing countries.

The introduction of the 5% RTFO target will create a demand for 1m tonnes of biodiesel in the UK. Currently the UK has the capacity to produce around 720,000 tonnes of rapeseed biodiesel from the 570,000 hectares currently growing rapeseed in the UK. It is estimated that reused vegetable can contribute a further 50,000 tonnes. This leaves a shortfall of over 230,000 tonnes. However, this does not take into account the food industry's demand for rapeseed oil as a food product. Some 40% of rapeseed oil currently goes to food uses.

There is potential to increase production using set aside land to grow rapeseed oil. The UK has around 644,000 ha of set aside land, of which about 50% could be allocated to rapeseed. The remainder would be allocated to wheat and sugar beet for bioethanol. This solution would contribute another 364,000 tonnes of biodiesel. The 5% target would be met, but only just, and there is no guarantee that such use of set aside land would be practical or acceptable. Targets above 5% would be impossible.

Moreover, this does not take into account the following issues surrounding rapeseed: its spread as a monocrop, its need for frequent crop rotation, its heavy requirement for fossil fuel fertilisers, the questionable yields from some set aside lands. Above all rapeseed vegetable oil has a relatively high market price.

In contrast, D1's initial operations indicate that imported feedstocks such as jatropha will be able to supply a significant proportion of future demand while offering significant potential to benefit economies in the developing world:

Benefits to agriculture in the developing world

- Jatropha planting will stimulate rural agriculture – agriculture can provide the scale of growth that many developing countries, particularly in Africa, require to stimulate economic growth
- Every 5,000 ha of jatropha creates 4,000 jobs - planting 1,500/maintenance 2,500. (In the UK one job is created for every 20 hectares of biofuel crop)
- New cash fuel crops can be grown on marginal, waste and unused land
- Redundant cash crops, e.g. coffee in East Africa, can be replaced with jatropha
- Jatropha can be intercropped with existing crops
- Refinery operation will transfer skills and technology



Benefits to energy use in the developing world

- Additional planting ensures local supplies of less polluting biodiesel
- Reduced dependence on imported fossil fuel
- Enhanced energy security based on diversity of supply
- Improved energy efficiency:
 - Local biodiesel production for local transport use
 - Local biodiesel production for off-grid electricity generation

Environmental Benefits for Developing Countries

- Significant reduction of fossil fuel consumption
- Increased use of biodiesel will improve air quality
- Lower GHG emissions
- Potential for land remediation and reclamation
 - Arresting desertification
 - Restoring depleted soils
- Potential to earn CDM and Carbon Credits to sell to developed countries

2. Prospects for biofuels' market share in 2010

The current target of 5.75% market share of biofuels by 2010 will not be met by EU Member States, however it is important to stress that this failure is political and not due to feedstock limitations. While D1 supports the introduction of the RTFO in the UK, the government has been slow to implement this policy mechanism and even then at 5% it is less than the EU reference value of 5.75%.

From a UK prospective D1 believes we will be able to supply a proportion of the 1m tonnes required from our own imported feedstock supplies by 2010 and to supply further demand should the EU and UK governments introduce a higher level of obligation.

D1 is planting marginal and waste land in India, Africa and South East Asia. Although a considerable portion of the vegetable oil and biodiesel we produce will be consumed in the countries where the crops are planted, we expect to be in position to supply through imports a significant proportion of an RTFO of 5% and above.

We currently have 32,000 tonnes of operating biodiesel refinery capacity in Middlesbrough on Teesside in the North East of England, and we aim to increase that to 72,000 tonnes by the end of 2006. In 2007 we expect to add another 150,000 tonnes of capacity in the UK. We are currently importing soya oil from Brazil as the feedstock for these refineries.



3. Targets and support for biofuels

Currently the biofuels industry in the UK is small and by definition the commercial players in the sector are often small, entrepreneurial operations. D1 is such a business, having been floated on the UK Stock Market in 2004. Given the need to bring these growing businesses to profitability as soon as possible, the industry requires subsidies from the government and the fuel rebate of 20ppl has been a significant encouragement to investment. However, a higher level of rebate would provide stronger support.

D1 believe it is necessary to have a combination of support systems designed to encourage demand for biofuels; such as tax reductions and exemptions in combination with biofuels obligations. While the RTFO has created the beginnings of a market, if the obligation ends up replacing the rebate the impact on the industry could be negative.

3.2 Options for adapting the system of targets and support for the period up to 2010

D1's preference would be Option D

Option D: The biofuels directive is amended to require Member States to use biofuel obligations (requiring fuel suppliers to incorporate a given percentage of biofuel in the total amount of fuel they place on the market) as a tool to achieve national targets.

D1's preference is for an EU-wide obligation mechanism, where by all Member States have obligations and then these obligations are harmonised by the EC. D1 are hesitant about the EU adopting a mandate. Due to the difference market conditions throughout the EU a mandate may not be appropriate all Member States, a potential consequence being a low-fuel blend.



4. Certification of biofuels

While D1 understand and empathise with the biofuel industry's concern over the complexities in developing certification criteria we support the creation of an environmental assurance scheme to demonstrate sustainability of supply. We are pioneering the commercial production of a new energy crop, *Jatropha curcas*, which we believe will have a positive environmental impact:

- *Jatropha* does not require arable land
- *Jatropha* can reclaim waste and depleted land
- *Jatropha* can assist in arresting desertification

Jatropha can also be intercropped with other agricultural crops, and need not result in monocropping. Because *jatropha* does not require arable land, it can be grown on land that is already waste, unused, marginal or degraded and should not result in deforestation. We believe that *jatropha* is a sustainable biodiesel feedstock that can produce surpluses for developing countries to export to the developed world. As this is a new crop we believe that it is important to demonstrate its sustainability in comparison to existing alternatives. As our operations get underway, we will be in a position to demonstrate the sustainability of *jatropha* planting on a large scale.

Furthermore, we believe that certification regimes for biofuels should encourage crops that possess both sustainable characteristics and which offer potential benefits to the economies of developing countries. Therefore, despite the potential complexities of such a system of certification, we strongly support its development.

5. Beyond 2010

5.1 Should the EU continue acting in favour of biofuels after 2010?

D1 welcomes the European Commissions review of the Biofuels Directive. We see this as a significant encouragement to the European and UK biofuels industry, whether the feedstocks come from domestic sources or overseas. The target effectively creates a market overnight and is encouraging investment. However, the UK remains well behind France and Germany in the levels of biofuels currently used within the economy, and we note that our domestic target of a 5% RTFO by 2010 still falls below the 5.75% recommended by the EU Biofuels Directive. It is essential for the biofuels market that the EU continue acting in favour of biofuels after 2010. A decision on the next step up of the target in terms of a higher % and a firm date for the increase would be of benefit to the industry.



5.2 If the EU continue acting in favour of biofuels after 2010, should this action include or exclude the definition of a quantified target for biofuels?

D1 believe from experience of the RFTO in UK that quantified targets effectively create an instant market and are fundamental in stimulating investment. To complement obligation targets a full-range of 'market-enabling' measures are also required.

5.2 If the EU is to define a quantified target for biofuels after 2010, what should it be? What year(s) should it relate to – 2015? 2020? both?

D1 believe long term targets are essential for market development. Although we would welcome more ambitious targets, we support the UK industry consensus on targets for biofuels:

- 5.75% by 2010
- 8% by 2015
- 15% by 2020

D1 are confident that these targets are achievable as long as 'concrete' policies are in place. We also believe that higher targets are possible if production is encouraged in the developing world.

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