



Fuel crop: low-grade wheat can make an excellent biofuel

**BIOFUELS** The UK is well placed to become a serious biofuel producer through the use of low-grade wheat

# Biofuels offer road ahead for UK



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Transport contributes one-quarter of all greenhouse gas (GHG) emissions, with 80 per cent coming from road transport and half of that from cars.

Furthermore, it has been reported that total CO<sub>2</sub> emissions from cars will double by 2050 unless alternatives to fossil fuels are developed.

Liquid Renewable Transport Fuels (RTFs) in the form of bioethanol and biodiesel are the only current alternatives to fossil fuels that materially cut rising GHG emissions in the transport sector.

Aspirations for electric vehicles, even under current ambitious government plans, are only anticipated to replace roughly 0.1 per cent of road transport fuel by 2020. Longer term goals of developing hydrogen fuel cells are yet to be proven and are therefore not considered deliverable in the near future.

The EU Renewable Energy Directive (RED) now sets mandated fuel blending requirements of 10 per cent by energy (13 per cent by volume) of the total road transport fuel pool by 2020. This will be supported by an extension to current UK Renewable Transport Fuel Obligation (RTFO) to ensure that UK obligated fuel suppliers also blend 10 per cent RTFs.

This creates a huge market for RTFs – 6.5bn litres in the UK, 49.5bn litres in the EU by 2020 – which equates to a new market in Europe the size of the global market for RTFs in 2006.

## Uplift in demand

Given current blending at roughly 8bn-10bn litres, this means a five to six-fold uplift in just 10 years although it should be noted that it took Brazil 30 years to develop a market for 20bn litres. Therefore because of the mandated EU RED, independent market appraisal confirms that demand for RTFs will exceed supply from 2013-2015 onwards.

Given the sheer scale of the uplift in demand, Brazil and other importers will only supply a limited amount – independent analysis suggests no more than 20 per cent of ethanol. Domestic production will therefore be essential. Indeed, Brazil plans to import 1.1m litres of anhydrous ethanol in 2011-12 to meet growing local demand and cover a domestic shortage.

The EU RED also requires RTF producers to comply with stringent carbon emission-reducing and sustainability criteria from April 2013, which will undoubtedly favour cereal crop biofuel technologies.

Cereal crop bioethanol production uses proven bio-refining technology and is commercially viable today.

Cereal crop ethanol production produces a high protein animal feed co-product (DDGS) as part of the bio-refining process, providing an important revenue stream/hedge on raw material costs, but also negating the 'food versus fuel' argument, as DDGS reduces the need to import protein substitutes, such as soy, from more ecologically sensitive parts of the world. In doing so, it actually enhances the food chain, rather than eroding it.

In addition, the UK government review in 2008 concluded that RTF policies have much less of an effect on prices for EU cereals than other feedstocks. For wheat, they ranged from a drop in price of 2.6 per cent in the EU to a price increase of just 0.2 per cent in southern Africa and Brazil.

In contrast, oilseeds, the feedstock for most biodiesels, are the worst affected, with projected price increases of 50-72 per cent.

The European Commission is now looking at introducing crop-specific Indirect Land Use Change (ILUC) factors as early as 2016. Such a move would favour the bioethanol industry which would be likely to be able to meet these targets, whereas such targets would pose a major challenge for the biodiesel industry.

The UK is well placed to be a global leader in bioethanol production, with a domestic surplus of the low-grade feed wheat required in the bio-refining process, a large petroleum market and a skilled workforce.

In particular, the North-East of England is ideally suited for biofuel production with close proximity to arable land, existing petrochemical infrastructure and a deep water port on the Humber.

Overall, in the 2008-09 period, the UK sourced just 8 per cent of its total RTFs domestically. To meet the mandated UK RTFO targets, and assuming an even split between biodiesel and bioethanol, six to seven large-scale bioethanol plants (defined as producing roughly 500m litres a year) will need to be built by 2015. None currently exist, and only two other large-scale plants are due to come on line within this timeframe.

## Tax-efficient investments

To date there has been investment of approximately £550m in the UK bioethanol industry, with a further £200m expected by the end of 2011.

The industry is creating new jobs and reinvigorating manufacturing opportunities in economically deprived regions of the country, while providing an immediate and sustainable solution to the decarbonisation of road transport.

There are various tax-efficient investment routes into renewable energy, including Enterprise Investment Schemes (EIS) and Venture Capital Trusts (VCT) products, offering investors 20 per cent and 30 per cent tax relief, respectively. Feed-in tariffs and other government subsidies provide incentives and offer a level of risk mitigation in an otherwise speculative industry sector.

Other more bespoke investments can offer protection through the use of capital allowances, which arise as a result of incurring expenditure on what are often capital-intensive projects.

The use of PropCo/OpCo structures and Limited Liability Partnership (LLP) investment vehicles provides a mechanism for an individual's capital contribution to be real venture funding, with significant downside protection arising through the use of excess capital allowances.

It is not unusual for such investments to have target annual returns in excess of 30 per cent, with up to 100 per cent capital protection over the term of the investment.

Such renewable energy investment opportunities offer individuals the ability to have a diversified and balanced investment portfolio using uncorrelated financial products.

To quote US president Barack Obama: "To truly transform our economy, protect our security, and save our planet from the ravages of climate change, we need to ultimately make clean, renewable energy the profitable kind of energy."

UK bioethanol technology is sustainable, profitable and available today.

Jonathan Turney is associate director of renewable energy at Future Capital Partners

## main points

» Globally, transport accounts for one-quarter of all greenhouse gas (GHG) emissions, with 80 per cent coming from road vehicles, and half of that from cars

» Bioethanol and biodiesel are the only current alternatives to fossil fuels that cut rising GHG emissions

» The EU Renewable Energy

Directive (RED) and an extension of the current UK Renewable Transport Fuel Obligation (RTFO), which set mandated fuel blending requirements, create a huge market for RTFs

» The UK is well placed to be a global leader in bioethanol production, with a domestic surplus of the low-grade feed wheat required in the bio-refining

» To date there has been investment of approximately £550m in the UK bioethanol industry, with a further £200m expected by the end of 2011

» There are tax-efficient investment routes into renewable energy, including EIS and VCT products, offering investors 20 per cent and 30 per cent tax relief respectively