

# Biofuels – An Industry Perspective

Andy Bulman  
Stallingborough 8<sup>th</sup> February 2008

**vivergo**fuels



# Relevant 'Megatrends'

## Climate change

CO2 levels highest  
for 25m years

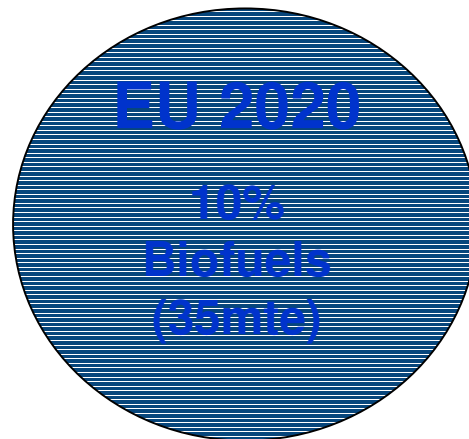
Road Transport  
+50% in next 15 yrs

Public concern  
growing

## Rural Development

Move from high  
regulation to free  
market

Globalisation of  
agricultural markets



Diminishing Oil  
Reserves

Reserves in unstable  
countries

Oil demand  
increasing

Upward pressure on  
oil price

Growing dependence  
on imports

## Fuel Cost & Security

# Biofuels – Key Points

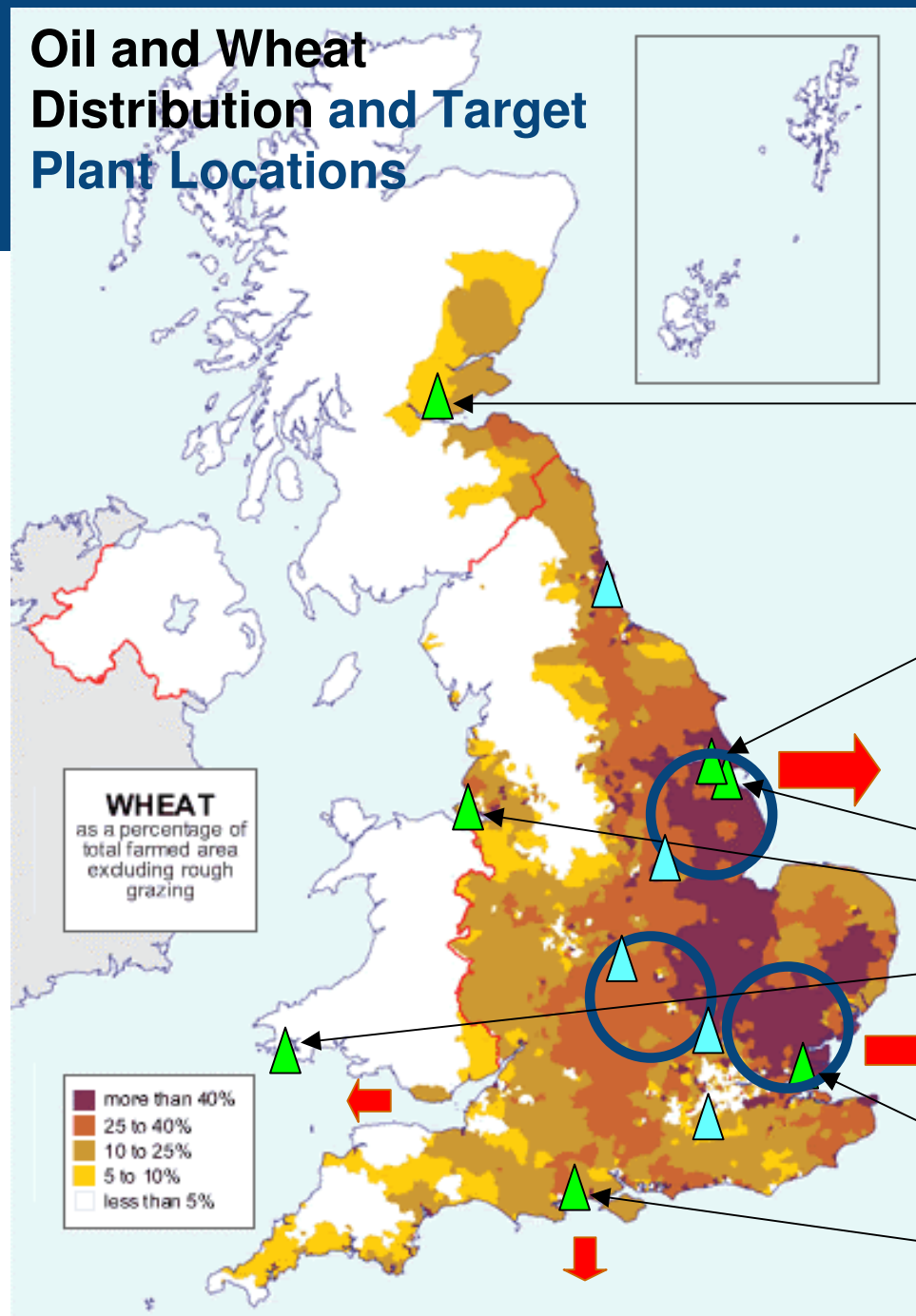
- GHG emissions from the transport sector are significant (~25%)
- Changing consumer behaviour is a slow process and politically difficult
- Alternative technologies to replace the internal combustion engine (e.g. hydrogen) are not ready
  - Inertia – working with today's technology
- Energy security will be a feature of the future political landscape
- Delivering a sustainable benefit is essential to maintain support
- Innovation will be the key to long term success
  - Agriculture & Crop Advancement
  - Process and Vehicle Technology
  - Fuel Standards
- EU Commission Jan 08 – “Biofuels are most immediately feasible way to slow growth in transport related GHG emissions”



- **Biofuels are part of the solution, but not the whole solution**

# Oil and Wheat Distribution and Target Plant Locations

# Project Development



- Oil Refineries
- Fuel Terminals
- Wheat Export
- Target Locations

Ineos

Total

Conoco Shell

Texaco

Petroplus

Exxon

UK Crop:

14m – 15m tpa Wheat

Export:

~3m tpa Wheat

# BP Chemicals Hull



# Wheat to Biofuels Plant - Hull

- **June 2007**

- Joint Venture Formed – British Sugar, BP and DuPont

- **1.1m te per year wheat**

- **420m litres per year ethanol (1.8% UK petrol pool)**

- **360k te per year DDGS**

- Animal feed or biomass to energy?

- **£200m investment**

- **Aker Kvaerner / Praj Engineering**

- **Currently completing Front End Engineering Design**

- **Expect to be operating end 2009**

# Key Success Factors

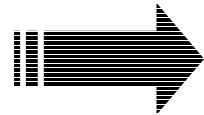
- Supply chain partnership – Big Agriculture meets Big Oil !
- ‘Cost Leadership’ from:
  - Efficient supply network
  - Efficient processing
  - Efficient product distribution
  - Effective capital investment
- Strong co-product management
- High quality environmental footprint
- Competences to manage the trading risks
- Innovation to maintain cost and environmental leadership
- Supporting the Regulator with policy development

# Biofuels – Development Pathway



## 1<sup>st</sup> Generation

Indigenous Prod,  
Easy Conversion,  
Simple Technology,  
Infrastructure Dev



## Advanced Biofuels

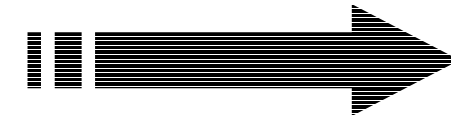
More Compatible,  
Lower Inclusion  
Cost

## 2nd Generation

Low Cost, High  
Yield, Non Food  
Crops, Sustainable  
Sources



**Niche**  
Electric,  
Hydrogen



Regulatory support for market will evolve with the industry



Thank you for your time

There are exciting times  
ahead!