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Our role

- Permitting
 - PPC permits (soon to be EPs)
 - Waste Management Licences
 - Water abstraction permits
- Understanding potential impacts
 - Biomass Environmental Assessment Tool (BEAT)

Key Issues

- No guarantee of reducing greenhouse gas emissions (emissions 2-106% of those of conventional fuels)
- Potentially significant environmental effects at local, EU & international levels
 - Land & water
 - Process affects water quality, waste management, biodiversity & soil fertility
 - Deforestation could remove any savings in CO₂ emissions

Key Issues – targets and policy

- Since 1990 other sectors have made cuts in GHG emissions. Transport emissions have increased from 40.9MtCe in 1990 to 43.8MtCe in 2004
- Government introducing Renewable Transport Fuel Obligation (RTFO) to meet objectives of EU Biofuels Directive
 - 5% (by vol) total fuel from renewable sources by 2010/11
 - (EU non-binding target of 5.75%)
 - Projected to save 1Mt Carbon per year
 - EC proposal that by 2020 10% (by energy content) of road fuel from biofuels. Incentive scheme to reduce environmental harm of cultivation

Key Issues – biomass hierarchy

- In order of cost effectiveness (£/tonneC)
 - Heating
 - Combined Heat & Power (CHP)
 - Co-fired electricity generation in large fossil fuel plants
 - Dedicated biomass power plant
 - Transport fuels
- Examples of the cost of reducing CO₂
 - Biodiesel £137/tCO₂
 - Bioethanol (Wheat) £152/tCO₂
 - Biomass for heat in large industrial boiler £76/tCO₂
 - Biomass for heat in small commercial boiler £78/tCO₂
 - Sugar beet – generally higher savings than other biomass
 - Second generation fuels - £30-50/tCO₂?

Key Issues – UK & EU environment & land use implications

- 740,000 Ha in the UK would be required to grow half the crops needed to meet UK's 5% renewable transport target
- Up to 800,000 Ha could be available by 2010, but...
 - Includes land set-aside
 - Includes a large area released from food & fodder production
 - Replacing set-aside land could lead to loss of habitat & damage to biodiversity
- Impacts on water use, groundwater recharge and eutrophication. CO₂ release from new land used for arable production

Key Issues – UK & EU environment & land use implications

- Across the EU – 14,000,000 Ha to meet the 5.75% target in 2010; 13,000,000 Ha available
- Demand is likely to increase environmental pressures in countries outside the EU
 - Palm oil demand leading to deforestation in Malaysia & Indonesia
 - Loss of biodiversity & habitat and cancelling any carbon savings

Solutions we call for

- Government policy to bring about the maximum reduction in GHG emissions in a cost-effective way; based on the biomass hierarchy. There is a compelling case for the use of biomass at the higher end of the hierarchy (heating) in preference to the lower end (for transport)
- Government should assess other ways of reducing GHG from road transport, and compare the environmental & financial costs with those of using biofuels. This should shape EU & UK targets
- Further research needed into the effects of biofuel blends > 5% of transport fuel – especially particulate & NO_x emissions
- RTFO should be designed as a Low Carbon Fuel Obligation, with incentives favouring lower carbon fuels. Supplier to prove a minimum 50% carbon saving over previous land use; high carbon impact fuels ruled out
- RTFO incentives to limit environmental damage – set environmental standards to be met, 'Kitemark' for fuels meeting the standards

BEAT – a co-firing example

Microsoft Access - [Input form]

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Record No. **1** New Delete ← → Navigate

Enter name of plant Or search for a plant in the database

Enter plant location name

Enter grid reference

Select plant type

Record entry by: Staff name Job title

Cofiring

Enter data: complete all boxes in section 1 first

1 Enter thermal rating MWh

Enter electricity output (use typical value in blue box if unknown) MWe

Enter annual load factor (use current value entered if unknown) %

3 Select description of site access

Select description of site location

2 Select fuels for co-firing (max. 4) and enter tonnes per annum and NCV (GJ/t)

	t/ann.*	NCV GJ/t	NCV typ. values	% total thermal input
Short rotation coppice (cut and chip) - chips	<input type="text" value="25000"/>	<input type="text" value="13.6"/>	<input type="text" value="19"/>	<input type="text" value="0.1"/>
Forestry residues - chips	<input type="text" value="375000"/>	<input type="text" value="14.0"/>	<input type="text" value="19"/>	<input type="text" value="2.1"/>
Miscanthus - chips	<input type="text" value="100000"/>	<input type="text" value="17.5"/>	<input type="text" value="19"/>	<input type="text" value="0.7"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0.0"/>		
Total	<input type="text" value="500000"/>			<input type="text" value="3.0"/>

* Tonnes should be entered as 'oven dried tonnes'

Environmental Impacts Summary | Emissions Summary | Cultivation / Delivery Impacts | Preview Report | Fuel definitions | Help | Front Page | Exit

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BEAT - Impacts

Microsoft Access - [Cultivation / delivery data]

File

Plant Name **Drax Tests**

NB. Biomass yields and hence cultivation areas can vary. These estimates are based on typical yields and lorry sizes, and assuming all biomass is delivered by road. Full details are given in the manual.

Fuel Type	Hectares for cultivation	Delivery lorries per week
Forestry residues - chips	250000	481
Miscanthus - chips	10000	113
Short rotation coppice (cut and chip) - chips	4167	32
Total	264167	626

[Emissions Summary](#)
[Environmental Impacts Summary](#)
[Return to Input form](#)
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Current projects within the region

- Co-firing at the Aire Valley power stations
 - Target of 400MW of biomass-fired generation capacity at one station
 - ‘Kick start’ local market
 - Opportunities for a bio-refinery project?
- e-on plans for renewable fired power station in Sheffield – 25MWe
- Straw burning power station in East Yorkshire
- Vivergo – bio-ethanol from wheat – 350,000 tpa and pilot bio-butanol plant

Biomass - the wood-yard



6Ha
30,000t
=14hr Coal

Renewable fired station - Lockerbie



