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The Commercial and Environmental Sustainability of Biomass-Fuelled Power Generation in the United Kingdom

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"Woodfuel Supply Chain – Sharing Experience"
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Agenda

- Regulatory Framework in the UK
- E.ON Climate & Renewables
- E.ON's UK Biomass Portfolio
- Biomass Market Update
- Biomass & CSR
- Commercial Sustainability
- Conclusion

The Regulatory Framework – The Renewables Obligation

- British Government requires all electricity supply companies to source a proportion of the electricity they sell from renewables
- Renewables Obligation (RO) target for 2006-7 was 6.7% and will rise to 15.4% by 2015-16
- In response to the EU's 2020 Renewable Energy Target of 15% for the UK the RO target will have to increase further

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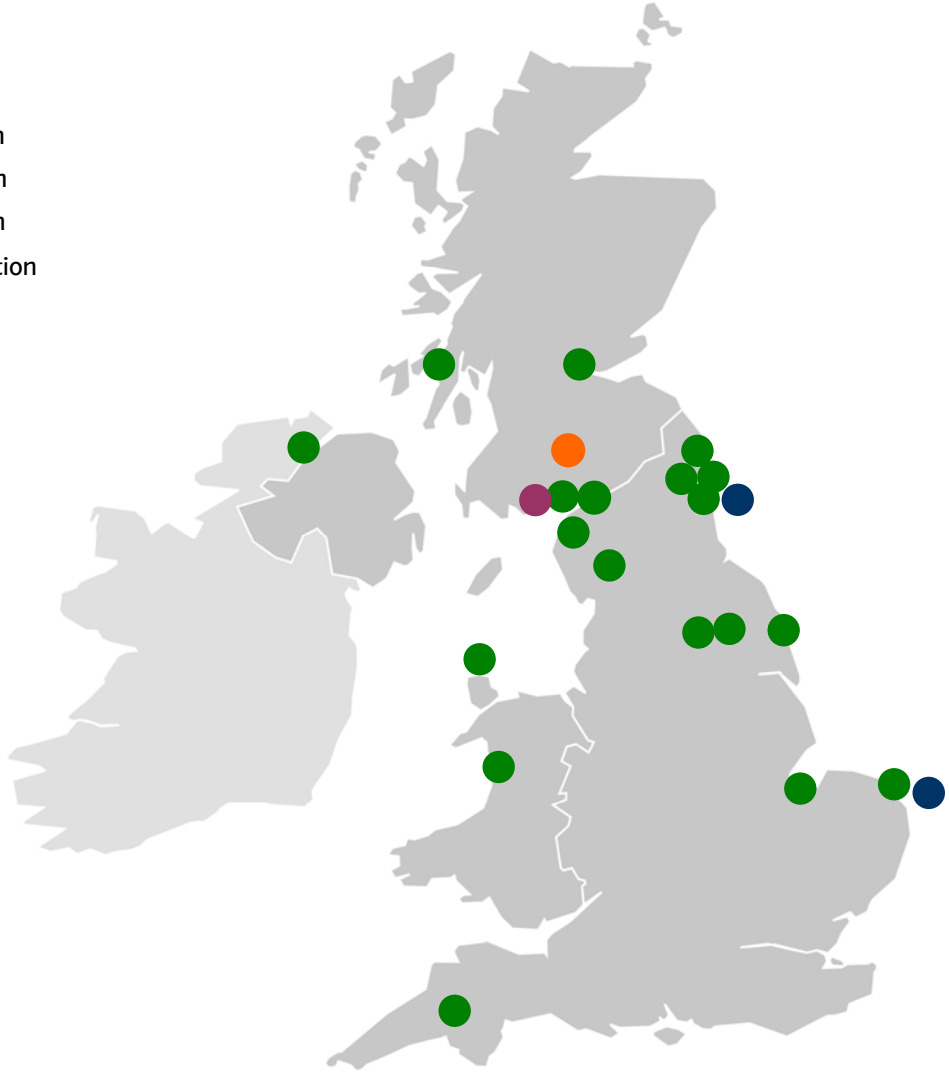
E.ON Climate & Renewables

E.ON Climate & Renewables

- E.ON Climate & Renewables was established in January 2008 to manage all existing and future renewable operations on a global scale
- Our focus in the UK is currently in onshore/offshore wind and biomass
- E.ON Climate & Renewables is gearing up for the Round 3 challenge where up to 25GW of new site leases will be available from the Crown Estates in 2009 (subject to the result of the SEA process)
- We are also looking to the future by establishing a team which is dedicated to bringing forward promising technologies including wave and tidal

E.ON Renewable sites in construction and operation in the UK

- Onshore in operation
- Offshore in operation
- Biomass in operation
- Offshore in construction



E.ON Climate & Renewables are playing a key part in delivering E.ON's low carbon agenda

- 21 operational onshore & offshore wind farms
- Now operating one of the UK's largest dedicated biomass power stations – the award winning Steven's Croft, near Lockerbie
- Developing one of the world's largest offshore wind farms
- Currently constructing one of the UK's largest offshore wind farms – Robin Rigg
- Recently received planning permission to develop our second dedicated biomass plant – Blackburn Meadows
- We are committed to investing over €6 billion in the period up to 2010, some of which will be spent in the UK

Overview of E.ON UK Biomass Portfolio

- Currently there are a number of biomass projects in operation, development or at a planning stage:

  - **Existing co-firing** ~150kt per annum (international & domestic)

  - **Steven's Croft Power Station, Lockerbie** ~ 500kt per annum (domestic)

  - **Blackburn Meadows, Sheffield, potential 30MW recycled wood-fuelled power station** ~ 200kt per annum per station (domestic)

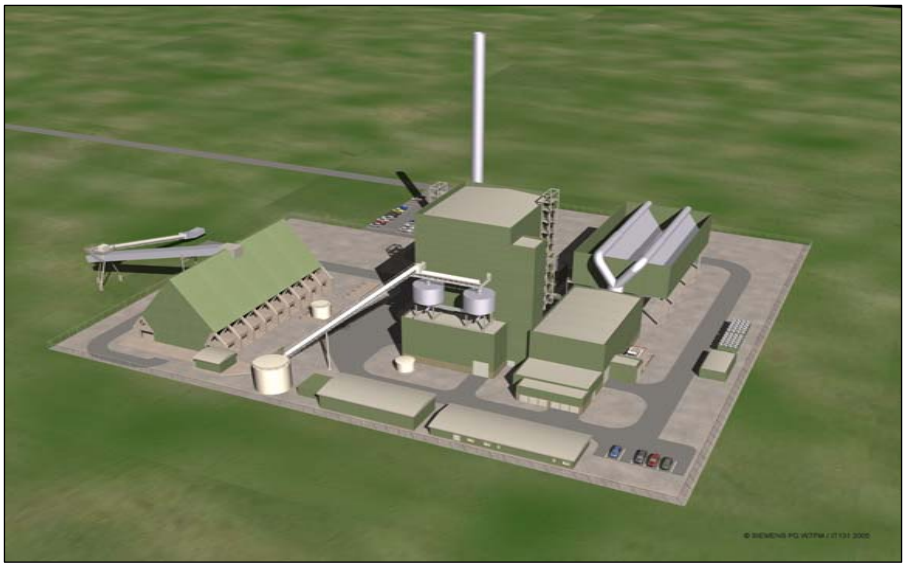
  - **Bristol, potential 150MW wood-fuelled power station** ~ 1mt per annum (international and domestic)

Co-Firing

- E.ON UK has co-fired at all three of its coal fired power stations
- Majority of co-firing at Kingsnorth (2000MW)
  - Dedicated storage silos (600 tonnes each) and reception facility
  - Biomass delivered by road from UK sources or via UK ports
  - Constraints on burn for certain coals / no. of road vehicles / dust

Steven's Croft, Lockerbie

- Steven's Croft is the first E.ON UK bespoke biomass scheme
- The largest in the UK
- 44 MW wood burning biomass plant
- E.ON investment of some £90m
- 500kt of wood fuel per annum
- Follow on projects anticipated



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Fuel

- Wood fuel will comprise a controlled mix of:
  - sawmill residues (wood chip, sawdust)
  - small round-wood (chipped)
  - recycled wood (chipped)
  - energy crop (short rotation coppice)

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Biomass Market Update

Biomass Market Update

- Extreme, unprecedented price volatility in agricultural commodities
  - **very rapid growth in an emerging, global market**
  - **extremely complex interdependencies and market fundamentals**
  - **Wheat £65/t summer ’06 to £180/t summer ’07 to £210/t Spring ’08**
  - **Global drought**
    - **Worst drought in Australia on record**
    - **Worst in US since Great Depression**
  - **Burgeoning population growth**
    - **(by 6 million per month)**
  - **Increasing prosperity = demand for meat**
    = demand for feed = demand for land

} Especially China/India

Biomass Market Update (Cont'd)

- Freight market volatility – increased trading of grain!
- Competing markets – Food & Feed Vs Fuel
- Traders competing for the same product
- Short term nature of agricultural supply contracts
- Biomass already influencing the agri-sector
- Biofuels will accelerate the impact
- UK could go from wheat export parity to import parity
- Price hedging is a challenge but agri-commodity derivatives trading is on the horizon

Biomass Market Update (Cont'd)

- Need for market maturity and ability to manage biomass fuel price risk to hedge investments over longer term
- Market hype = market expectation
  - Reality needs to set
- Need to look further a field to Baltic, South America and Africa and . . .
- Go upstream!?

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Biomass & CSR

Corporate Social Responsibility is …

'the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families, as well as the local community and society at large. This means that we should be mindful of the impact our actions may have on the environment and those around us.'

- Corporate Social Responsibility is one of E.ON's values and is firmly anchored in our corporate culture and the way we do our daily business

- E.ON UK is committed to Corporate Social Responsibility and in particular to a safe and sustainable environment for future generations to live in

Sustainability

- **Sustainability is about society meeting its needs, while preserving biodiversity and natural ecosystems now and in the future.**

- biodiversity can be defined as the variety, distribution and abundance of living organisms in an ecosystem. Maintaining biodiversity is believed to promote stability, sustainability and resilience of ecosystems.

- E.ON UK will always seek to ensure that all biomass is purchased from a sustainable and socially responsible source

Environmental Sustainability – The Issues

- Deforestation
- Water usage
- Ethical land usage – food crop displacement
  - **Food & Feed Vs Fuel**
  - **Price increases in basic foodstuffs**
  - **Poor energy crop take-up due to competition with wheat price**
  - **Emotive issue**
  - **Simplistic arguments on both sides of the debate**
  - **Need to be informed and aware of perceptions**
- Genetic Modification

E.ON UK's Response

- Corporate Social Responsibility Policy for Biomass Purchasing
- Engagement with NGO, UK University and IEA's Task 40
  - **Report received: 'Evaluation of the Potential for Sustainable Supply of Biomass for Electricity Generation for E.ON UK Power Plants'**
- Health & Safety is paramount
- Support for an industry-wide accreditation scheme for sustainable biomass
- No co-firing of primary human food sources
- No GM biomass

Requirement to report on Sustainability of Biomass from April 2009

- Biomass used, origin and volumes;
- Whether it is a waste/residue or co-product or energy crop;
- Whether it has been sourced under any quality standards (in particular sustainability standards under the Road Transport Fuel Obligation (RTFO), the Roundtable on Sustainable Palm Oil (RTSPO), or land use standards under the Directive on Integrated Pollution Prevention and Control (IPPC));
- What the land use has been from 2005; and
- Whether producers/generators are under any voluntary code of conduct.

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Commercial Sustainability

ROC Banding

- With effect from April 2009
  - **0.5 ROC for non-energy crop co-firing**
  - **1 ROC for energy crop co-firing**
  - **1.5 ROCs for non-energy crop dedicated biomass stations**
  - **2 ROCs for energy crop dedicated biomass stations**

New requirement to report on sustainability of Biomass

Commercial Sustainability – The Economics of Biomass

Benefits:		ROC Value	(Fixed)
	+	Recycled Value	(Variable)
	+	LEC	(Fixed)
	+	Value of Displaced Coal **(In the case of co-firing)**	(Variable)
	+	Value of Carbon Abated **(In the case of co-firing)**	(Variable)
Less Costs:		Biomass Fuel	(Variable)
	+	Operating Costs	(Fixed/Variable)

Ensuring Commercial Sustainability

- Robust regulatory framework, delivering value to existing co-firers and dedicated biomass power project
- Long term incentives to co-fire at new coal plants and dedicated biomass projects
- Appropriate banding for co-fired ROCs
- Market maturity – ability to manage biomass fuel price risk to hedge co-firing investments

Conclusion

- Co-firing has been a success, but its future is in doubt
- Environmental impacts need to be recognised and addressed
- Robust regulatory framework:
  - **reward co-firers and dedicated biomass projects**
  - **support longer-term investment and biomass fuel supply contracts**
  - **encourage new, sustainable supply channels**
- Market maturity:
  - **ability to manage biomass fuel price risk to hedge biomass investments**
  - **deliver high environmental standards**

And finally …

- The growth of global developments in biomass and biofuel production and use has been rapid

- There is a growing opportunity for sustainable, safe, commercially viable long-term imports of biomass into the United Kingdom

Can the international forest industry meet the challenges?

Thank you

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