

ESB Power Generation Biomass



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Agenda

- Overview of external drivers
- Technology options
- Fuels & Issues
- ESB Plant Options & Issues
- Environmental Factors
- Financial Analysis
- Conclusion



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Overview of the external drivers

- EU and National energy/GHG requirements
- Energy White Paper
 - Program for Government
- Bioenergy Action Plan for Ireland
- Market issues/restrictions
- New technology and developments



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Technology Options

- Co-firing in existing boilers.
 - Replace part of fuel input without major plant modifications. High efficiency and relatively cheap route.
- Partial Gasification
 - External to boiler but with burn-off within boiler. High efficiency route but significant expense.
- Direct Combustion (External Boiler)
 - Dedicated external boiler – low efficiency unless integrated into power plant cycle. Expensive.



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Fuels ESB interest only in CLEAN fuels.

Solid clean biomass

- Forestry Residue
- Purpose-grown bio-energy crops



Waste - excluded

- Specific Issues



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Fuels - Issues

- Sources & Availability
 - Supply
 - Support mechanisms
- Supply & logistics
 - Local
 - Transportation
 - Sustainable
 - Storage
 - Competition for biomass?



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ESB Plant Options & Issues

- Lough Ree & West Offaly Power
 - Possibility of Co-firing
 - Logistics
 - Licence & planning permission
- Moneypoint
 - Low potential for gasification or direct co-firing



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Environmental Factors

Benefits:

- Renewable
- Carbon neutral
- Lower emissions
- Spillages are biodegradable and non-polluting

Disadvantages:

- Some fuels are problematic
 - Fouling & corrosion
- Habitat impacts
- Sustainability.



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Financial Viability

- REFIT
- Benefit of avoided carbon credits
- Delivered fuel price Vs Heat content
- Agricultural issues such as CAP reform, REPS



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In Conclusion

- ESB committed to using clean biomass to the maximum technical and economic extent.
- Lough Ree, West Offaly & Moneypoint are potentially feasible candidates.
- ESB currently reviewing biomass options including supply and engineering aspects and in conjunction with other stakeholders
- Supply chain needs to be developed..



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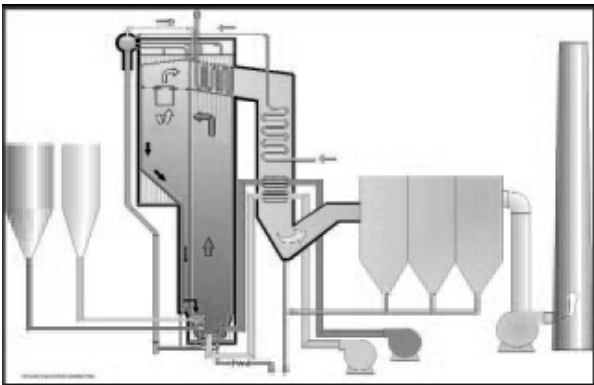
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End



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Fuel Data ◀

Biomass Type	Net Calorific Value (in dry matter)	Moisture	Ash	Bulk Density
	MJ/kg	%	%	kg/m ³
Peat	9-18 (25)	45-60 (6 - 13)	6-8 (3 - 10)	220-380 (850)
Short Rotation Coppiced Willow	17-19	40	1-4	150-250
Wood-shavings/Timber Processing Waste	10-19	20-45	1-3	250-350
Miscanthus (Misc. Giganteus)	15-17	13-22	4-6	60 loose 140 baled
Meat and Bone Meal	15-18	3-8	25-30	680-700



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