BIOMASS – SUPPORTING COAL's ROLE

Martin Bloemendal
Energy Edge Ltd

Coaltrans India, Mumbai, March 13, 2007

KYOTO TREATY per 16-02-2005

- Target: global reduction of CO2 emissions e.g. by using renewable fuels in stead of fossil fuels
- Countries like EU, Russia,Japan are committed e.g. EU15 by 2012 8% less emissions than 1990
- Countries like India, China, Indonesia have signed the treaty but have no(t yet) obligations
- UN Clean Development Mechanism Program allows creation of (tradeble) CER's, Certified Emission Reductions, through reduction projects in countries like INDIA

EU RENEWABLES TARGETS

- 21% of electricity from renewables per 2010
- 12% of total energy consumption from renewables per 2010
- original aim: reduce dependence of fossile fuels
- renewable sources are: biomass, hydro, wind, solar, geothermal
- European Commission 10-01-2007: New ENERGY POLICY for EUROPE to combat climate change: 20% of overall energy mix from renewables per 2020

DRIVERS of BIOMASS for POWER

(differing per European country,per generator)

- general EU targets
- national legislation/agreements/allocations
- avoiding penalties at non compliance
- national subsidies
- supply of ‘green electricity’ to customers opting for green
- reducing dependence of fossil fuels
- building green image
- developing new technologies incl. selling knowhow

BIOMASS abundant in RESIDUES

from

- trees and wood
- plants and fruits
- animals incl. manure
- paper and packaging
- household and garden
- construction and demolition

BIOMASS , some examples

- woodchips
- sawdust pellets
- olive cake
- coconut shells
- palm kernel shells and expellers
- rest products of crops like rice and sugar cane
- (used) fats
- animal bone meal
- chicken litter
- special crops like elephant grass

BIOMASS, combustion techniques

- FIRING in specific boiler
- COFIRING with coal in boiler or on fluidised bed; pretreatment by blending or separate grinding
- GASIFICATION and burning the gas in coal or gas boiler
- BURNING in cement kiln

NW EUROPE 2006 x 1000 t

biomass	quantity
woodpellets	2300
woodchips	1550
waste wood	1500
straw bales and pellets	750
palm products	650
sewage sludge	430
olive products	370
chicken litter	350
saw dust	270
other, various, mixed	430
	===
TOTAL 2006	8,600

NW EUROPE BIOMASS PRICING

Price level 2006 of imported biomass per tonne CIF ARA

Wood pellet	of 17 GJ/t	$ 8.25/GJ	$ 140
Olive pellet	of 18 GJ/t	7.50/GJ	135
Olive cake	of 16 GJ/t	6.50/GJ	105
Palm kernel expeller	of 17 GJ/t	6.90/GJ	115
Palm kernel shell	of 15 GJ/t	6.40/GJ	95
Palm oil	of 37 Gj/t	13.50/GJ	500
cf Coal	of 25 Gj/t	2.80/GJ	70

NW EUROPE PROSPECTS x 1000 t

	wood pellets	other	total
2005 real	2,100	6,600	8,700
2006 real	2,300	6,300	8,600
2009 potential	3,300	7,500	10,800
2012 potential	4,700	9,300	14,000

Potential figures assume new legislation in favour of cofiring for UK and Germany.

BIOMASS in INDIA

.Estimated annual production 350 MT

.Equivalent of 220 MT of coal !

.Use so far conventional, less efficient and less sustainable, according to United Nations

.Biomass examples: sugar cane bagasse
rice husk
mustard crop residue

BIOMASS in INDIA, Governmental

.Seperate ministry of renewable energy

.Fiscal incentives/facilities available

.Renewable power 6,000 MW per 2006

.Target renewable 10,700 MW per 2012

.Biomass power 1,000 MW per 2006

.Potential biomass 20,000 MW per ????

Source: CDM Country Guide for India 2006

BIOMASS for POWER in INDIA

Projects of biomass for power (co)generation under Clean Development Mechanism:

.registered 52

.reg. request 11

.at validation 122

Main characteristics:

.small scale, 2-20 MW

.manufacturing industry rather than generators

CHALLENGES of BIOMASS in INDIA

-identifying the opportunities
-organising the collection
-pelletising the product (where possible)
-optimising the transport
-avoiding competition food – energy (crops)

BLEND of BIOMASS and COAL

Possible locations of blending

for domestic coal and biomass:

-at power station

-in coal mining area

for imported coal and (domestic) biomass:

-at power station

-in port of discharge

-in port of loading

POWER GENERATORS in INDIA

opportunities:

-develop firing of domestic biomass
.in dedicated (small) units
.cofiring in coal boilers
-relieve growing coal needs
-create and sell CER's
-act before you are forced to

FUEL SUPPLIERS in INDIA

opportunities:

-enter biomass market
-develop creative logistics
-create new products like
15/85 biomass/coal blend
-act before you are forced to